FUNDAMENTALS OF INVESTING

LAWRENCE J GITMAN

MICHAEL D JOEHNK

SCOTT SMART

ROGER H JUCHAU

DONALD G ROSS

SUE WRIGHT

THIRD EDITION

ALWAYS LEARNING

PEARSON

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FUNDAMENTALS OF INVESTING

LAWRENCE J GITMAN / MICHAEL D JOEHNK / SCOTT SMART
ROGER H JUCHAU / DONALD G ROSS / SUE WRIGHT

THIRD EDITION

PEARSON

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Pearson Series in Finance

Alexander/Sharpe/Bailey
Fundamentals of Investments

Bear/Moldonado-Bear
Free Markets, Finance, Ethics and Law

Bekaert/Hodrick
International Financial Management

Berk/DeMarzo
Corporate Finance†

Berk/DeMarzo
Corporate Finance: The Core†

Berk/DeMarzo/Harford/Ford/Finch
*Fundamentals of Corporate Finance**

Bierman/Smidt
The Capital Budgeting Decision: Economic Analysis of Investment Projects

Boakes
Reading and Understanding the Financial Times

Bodie/Merton/Cleeton
Financial Economics

Brooks
Financial Management: Core Concepts†

Click/Coval
The Theory and Practice of International Financial Management

Copeland/Weston/Shastri
Financial Theory and Corporate Policy

Cox/Rubinstein
Options Markets

Dietrich
Financial Services and Financial Institutions: Value Creation in Theory and Practice

Dorfman
Introduction to Risk Management and Insurance

Dufey/Giddy
Cases in International Finance

Eiteman/Rath/Daly
Multinational Business Finance

Emery/Finnerty/Stowe
Corporate Financial Management

Fabozzi
Bond Markets: Analysis and Strategies

Fabozzi/Modigliani
Capital Markets: Institutions and Instruments

Fabozzi/Modigliani/Jones
Foundations of Financial Markets and Institutions

Finkler
Financial Management for Public, Health and Not-for-Profit Organizations

Francis/Ibbotson
Investments: A Global Perspective

Frasca
Personal Finance: An Integrated Planning Approach

Fraser/Ormiston
Understanding Financial Statements

Frino
Introduction to Trade Execution

Frino/Chen/Hill
*Introduction to Corporate Finance**

Frino/Jarnecic
Introduction to Futures & Options Markets in Australia

Geisst
Investment Banking in the Financial System

Girardone, Casu & Milyneux
Introduction to Banking

Gitman/Juchau/Flanagan
*Principles of Managerial Finance**

Guthrie/Lemon
Mathematics of Interest Rates and Finance

Haugen
The Inefficient Stock Market: What Pays Off and Why

Haugen
Modern Investment Theory

Haugen
The New Finance: Overreaction, Complexity and Uniqueness

Holden
Excel Modeling and Estimation in Corporate Finance

Holden
Excel Modeling and Estimation in Investments

Holden
Excel Modeling and Estimation in the Fundamentals of Corporate Finance

Holden
Excel Modeling and Estimation in the Fundamentals of Investments

Hughes/MacDonald
International Banking: Text and Cases

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Hull
Options, Futures and Other Derivatives

Hull
Risk Management and Financial Institutions

Hull/Treepongkaruna/Heaney/Pitt/Colwell
Fundamentals of Futures and Options Markets

Keown
Personal Finance: Turning Money into Wealth†

Kim/Nofsinger/Mohr
Corporate Governance

Levy/Post
Investments

Madura
Personal Finance†

Marthinsen
Risk Takers: Uses and Abuses of Financial Derivatives

May/May/Andrew
Effective Writing: A Handbook for Finance People

McDonald
Derivatives Markets

McDonald
Fundamentals of Derivatives Markets

Megginson
Corporate Finance Theory

Melvin
International Money and Finance

Mishkin/Eakins
Financial Markets and Institutions

Moffett
Cases in International Finance

Moffett/Stonehill/Eiteman
Fundamentals of Multinational Finance

Nofsinger
Psychology of Investing

Ogden/Jen/O'Connor
Advanced Corporate Finance

Pennacchi
Theory of Asset Pricing

Petty/Martin/Burrow/Nguyen
*Financial Management: Principles and Applications**

Psaros
Australian Corporate Governance

Rejda
Principles of Risk Management and Insurance

Schoenebeck
Interpreting and Analyzing Financial Statements

Scott/Martin/Petty/Keown/Thatcher
Cases in Finance

Seiler
Performing Financial Studies: A Methodological Cookbook

Shapiro
Capital Budgeting and Investment Analysis

Sharpe/Alexander/Bailey
Investments

Solnik/McLeavey
Global Investments

Steiner
Mastering Financial Calculations

Stretcher/Michael
Cases in Financial Management

Titman/Martin
Valuation: The Art and Science of Corporate Investment Decisions

Trivoli
Personal Portfolio Management: Fundamentals and Strategies

Valentine
Modern Financial and Investment Planning

Valentine/Ford/O'Hara/Sundmacher
Fundamentals of Financial Markets and Institutions in Australia

Vaughn
Financial Planning for the Entrepreneur

Welch
Corporate Finance: An Introduction†

Weston/Mulherin/Ahern
Takeovers, Restructuring and Corporate Governance

* Denotes Australian myfinancelab titles. Log onto **www.pearson.com.au/myfinancelab** to learn more.

† Denotes other myfinancelab titles. Log onto **www.myfinancelab.com** to learn more.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011

Pearson Australia
Unit 4, Level 3
14 Aquatic Drive
Frenchs Forest NSW 2086

www.pearson.com.au

Authorised adaptation from the United States edition entitled *Fundamentals of Investing*, 11th edition, ISBN 0131611704X by Gitman, Lawrence J.; Joehnk, Michael D.; Smart, Scott, published by Pearson Education, Inc., publishing as Prentice Hall, Copyright © 2008.

Third adaptation edition published by Pearson Australia, Copyright © 2011

The *Copyright Act 1968* of Australia allows a maximum of one chapter or 10% of this book, whichever is the greater, to be copied by any educational institution for its educational purposes provided that that educational institution (or the body that administers it) has given a remuneration notice to Copyright Agency Limited (CAL) under the Act. For details of the CAL licence for educational institutions contact:
Copyright Agency Limited, telephone: (02) 9394 7600, email: info@copyright.com.au

All rights reserved. Except under the conditions described in the *Copyright Act 1968* of Australia and subsequent amendments, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright owner.

Senior Acquisitions Editor: Dr Karen Hutchings
Senior Project Editor: Rebecca Pomponio
Development Editor: Katie Pittard
Editorial Coordinator: Aida Reyes
Production Coordinator: Barbara Honor
Copy Editor: Julie Ganner

Proofreader: Carolyn Pike
Copyright and Pictures Editor: Emma Gaulton
Indexer: Michael John Ramsden
Cover design by Peta Nugent
Cover image by Maren Caruso
Typeset by Midland Typesetters, Australia

Printed in China

1 2 3 4 5 15 14 13 12 11

National Library of Australia
Cataloguing-in-Publication Data

Title: Fundamentals of investing / Lawrence J Gitman [et al.]
Edition: 3rd ed.
ISBN: 9781442532885 (pbk.)
ISBN: 9781442551657 (Vital source)
Notes: Includes bibliographical references and index.
Subjects: Investments--Textbooks.
Authors/Contributors: Gitman, Lawrence J.
Dewey Number: 332.678

Every effort has been made to trace and acknowledge copyright. However, should any infringement have occurred, the publishers tender their apologies and invite copyright owners to contact them. Due to copyright restrictions, we may have been unable to include material from the print edition of the book in this digital edition, although every effort has been made to minimise instances of missing content.

Pearson Australia is a division of

PEARSON

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Brief Contents

Detailed Contents vi
Preface xv

PART ONE Preparing to Invest 1
1 The Investment Environment 2
2 Markets and Transactions 25
3 Investment Information and Securities Transactions 49

PART TWO Important Conceptual Tools 87
4 Return and Risk 88
4A The Time Value of Money 120
5 Modern Portfolio Concepts 133

PART THREE Investing in Shares 173
6 Shares 174
7 Analysing Shares 209
8 Share Valuation 248
9 Technical Analysis, Market Efficiency and Behavioural Finance 283

PART FOUR Investing in Fixed-Income Securities 319
10 Fixed-Income Securities 320
11 Bond Valuation 353

PART FIVE Portfolio Management 389
12 Managed Funds: Professionally Managed Portfolios 390
13 Managing Your Own Portfolio 426

PART SIX Derivative Securities 465
14 Options: Puts and Calls 466
15 Commodities and Financial Futures 497

Appendix A Financial Tables A-1
Index I-1

WEB CHAPTERS (at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885)
16 Investing in Preference Shares
17 Real Estate and Other Tangible Investments

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Contents

Part One Preparing to Invest 1

CHAPTER 1 The Investment Environment 2

Opening Vignette 2

Investments and the Investment Process 3

Types of Investments 3 / The Structure of the Investment Process 5

Investment Vehicles 7

Short-Term Investments 7 / Ordinary Shares 8 / Fixed-Income Securities 9 / Managed Funds 9 / Hedge Funds 10 / Derivative Securities 10 / Other Popular Investments 11

Making Investment Plans 11

Steps in Investing 11 / Considering Personal Taxes 13 / Investing Over the Life Cycle 13 / Investments and the Business Cycle 14

Meeting Liquidity Needs: Investing in Short-Term Vehicles 15

The Role of Short-Term Investments 16 / Investment Suitability 17

Careers in Finance 17

Summary 20 / Discussion Questions 21 / Problems 22 / Case Problems 22 / Excel with Spreadsheets 24 / Website Information 24

CHAPTER 2 Markets and Transactions 25

Opening Vignette 25

Securities Markets 26

Types of Securities Markets 26 / Organised Securities Exchanges 28 / General Market Conditions: Bull or Bear 31

Globalisation of Securities Markets 32

Growing Importance of International Markets 32 / International Investment Performance 33 / Ways to Invest in Foreign Securities 33 / Risks of Investing Internationally 33

Trading Hours and Regulation of Securities Markets 35

Trading Hours of Securities Markets 35 / Regulation of Securities Markets 35

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Basic Types of Securities Transactions 36
Long Purchase 36 / Margin Trading 37 / Short Selling 41

Summary 43 / Discussion Questions 44 / Problems 44 / Case Problems 46 / Excel with Spreadsheets 48 / Website Information 48

CHAPTER 3 Investment Information and Securities Transactions 49

Opening Vignette 49

Online Investing 50
Getting Started in Online Investing 50 / Using the Internet Effectively 53

Types and Sources of Investment Information 55
Types of Information 57 / Sources of Information 57 / Avoiding Online Scams 60

Understanding Market Averages and Indices 62
Sharemarket Averages and Indices 62 / Bond Market Indicators 66

Making Securities Transactions 66
The Role of Stockbrokers 66 / Basic Types of Orders 70
Online Transactions 71 / Transaction Costs 74 / Investor Protection 74

Investment Advisers and Investment Clubs 76
Using an Investment Adviser 76 / Investment Clubs 77

Summary 78 / Discussion Questions 79 / Problems 80 / Case Problems 82 / Excel with Spreadsheets 84 / Website Information 85

Part Two Important Conceptual Tools 87

CHAPTER 4 Return and Risk 88

Opening Vignette 88

The Concept of Return 89
Components of Return 89 / Why Return Is Important 90
Level of Return 91 / Historical Returns 92 / Time Value of Money and Returns 93

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Measuring Return 94

Real, Risk-Free and Required Returns 95 / Holding Period Return 96 / Yield: The Internal Rate of Return 98 / Finding Growth Rates 101

Risk: The Other Side of the Coin 103

Sources of Risk 103 / Risk of a Single Asset 105 / Assessing Risk 108 / Steps in the Decision Process: Combining Return and Risk 109

Summary 111 / Discussion Questions 112 / Problems 113 / Case Problems 116 / Excel with Spreadsheets 118 / Website Information 119

APPENDIX 4A The Time Value of Money 120

Interest: The Basic Return to Savers 120

Simple Interest 120 / Compound Interest 120

Computational Aids for Use in Time Value Calculations 122

Financial Calculators 122 / Computers and Spreadsheets 123

Future Value: An Extension of Compounding 123

Future Value of an Annuity 124

Present Value: An Extension of Future Value 125

The Present Value of a Stream of Returns 126

Present Value of a Mixed Stream 127 / Present Value of an Annuity 128

Summary 129 / Problems 129

CHAPTER 5 Modern Portfolio Concepts 133

Opening Vignette 133

Principles of Portfolio Planning 134

Portfolio Objectives 134 / Portfolio Return and Standard Deviation 134 / Correlation and Diversification 136 / International Diversification 141

The Capital Asset Pricing Model (CAPM) 144

Components of Risk 144 / Beta: A Popular Measure of Risk 144 / The CAPM: Using Beta to Estimate Return 147

Traditional Versus Modern Portfolio Management 150

The Traditional Approach 150 / Modern Portfolio Theory 151 / Reconciling the Traditional Approach and MPT 155

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Summary 157 / Discussion Questions 158 / Problems 160 / Case Problems 165 / Excel with Spreadsheets 168 / Website Information 169

CFA Exam Questions 170

Part Three Investing in Shares 173

CHAPTER 6 Shares 174

Opening Vignette 174

What Shares Have to Offer 175

The Appeal of Shares 175 / Putting Share Price Behaviour in Perspective 175 / From Share Prices to Share Returns 175 / The Pros and Cons of Share Ownership 176

Basic Characteristics of Ordinary Shares 178

Shares as a Corporate Security 179 / Buying and Selling Shares 181 / Share Values 182

Dividends 183

The Dividend Decision 184 / Types of Dividends 186 / Dividend Reinvestment Plans 187

Types and Uses of Ordinary Shares 189

Types of Shares 189 / Investing in Foreign Shares 194 / Alternative Investment Strategies 197

Summary 200 / Discussion Questions 201 / Problems 202 / Case Problems 205 / Excel with Spreadsheets 207 / Website Information 208

CHAPTER 7 Analysing Shares 209

Opening Vignette 209

Security Analysis 210

Principles of Security Analysis 210 / Who Needs Security Analysis in an Efficient Market? 211

Economic Analysis 212

Economic Analysis and the Business Cycle 212 / Key Economic Factors 213 / Developing an Economic Outlook 214

Industry Analysis 217

Key Issues 217 / Developing an Industry Outlook 218

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Fundamental Analysis 219

The Concept 220 / Financial Statements 220 / Financial Ratios 224 / Interpreting the Numbers 233

Summary 237 / Discussion Questions 238 / Problems 239 / Case Problems 244 / Excel with Spreadsheets 246 / Website Information 247

CHAPTER 8 Share Valuation 248

Opening Vignette 248

Valuation: Obtaining a Standard of Performance 249

Valuing a Company and Its Future 249 / Developing an Estimate of Future Behaviour 255 / The Valuation Process 257

Share Valuation Models 259

The Dividend Valuation Model 260 / Other Approaches to Share Valuations 267 / Other Price-Relative Procedures 271

Summary 274 / Discussion Questions 275 / Problems 276 / Case Problems 280 / Excel with Spreadsheets 282 / Website Information 282

CHAPTER 9 Technical Analysis, Market Efficiency and Behavioural Finance 283

Opening Vignette 283

Efficient Markets 284

Levels of Market Efficiency 284 / Market Anomalies 287 / Possible Explanations 288

Behavioural Finance: A Challenge to the Efficient Markets Hypothesis 289

Investor Behaviour and Security Prices 290 / Implications of Behavioural Finance for Security Analysis 294

Technical Analysis 295

Using Technical Analysis 295 / Measuring the Market 296 / The Big Picture 296 / Technical Conditions Within the Market 298 / Trading Rules and Measures 300 / Charting 303

Summary 308 / Discussion Questions 309 / Problems 310 / Case Problems 312 / Excel with Spreadsheets 314 / Website Information 315

CFA Exam Questions 316

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Part Four Investing in Fixed-Income Securities 319

CHAPTER 10 Fixed-Income Securities 320

Opening Vignette 320

Why Invest in Bonds? 321

Putting Bond Market Performance in Perspective 322 / Exposure to Risk 325

Essential Features of a Bond 326

Bond Interest and Principal 326 / Maturity Date 327 / Principles of Bond Price Behaviour 327 / Call Features—Let the Buyer Beware! 329 / Secured or Unsecured Debt 329 / Bond Ratings 330

The Market for Debt Securities 332

Major Market Segments 334 / Specialty Issues 335 / A Global View of the Bond Market 337

Convertible Securities 339

Convertibles as Investment Outlets 339 / Sources of Value 342 / Measuring the Value of a Convertible 342

Summary 346 / Discussion Questions 347 / Problems 348 / Case Problems 350 / Excel with Spreadsheets 352 / Website Information 352

CHAPTER 11 Bond Valuation 353

Opening Vignette 353

The Behaviour of Market Interest Rates 354

Keeping Tabs on Market Interest Rates 354 / What Causes Rates to Move? 356 / The Term Structure of Interest Rates and Yield Curves 357

The Pricing of Bonds 360

The Basic Bond Valuation Model 360 / Annual Compounding 361 / Semi-Annual Compounding 362

Measures of Yield and Return 363

Current Yield 363 / Yield-to-Maturity 364 / Yield-to-Call 366 Expected Return 368 / Valuing a Bond 369

Duration and Immunisation 370

The Concept of Duration 370 / Measuring Duration 371 / Bond Duration and Price Volatility 373 / Effective Duration 374 / Uses of Bond Duration Measures 375

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Bond Investment Strategies 377

Passive Strategies 377 / Trading on Forecasted Interest Rate Behaviour 378 / Bond Swaps 378

Summary 379 / Discussion Questions 380 / Problems 381 / Case Problems 384 / Excel with Spreadsheets 385 / Website Information 386

CFA Exam Questions 387

Part Five Portfolio Management 389

CHAPTER 12 Managed Funds: Professionally Managed Portfolios 390

Opening Vignette 390

The Managed Fund Phenomenon 391

An Overview of Managed Funds 391 / Essential Characteristics 395 / Exchange Traded Funds (ETFs) 397

Types of Funds and Services 399

Types of Managed Funds 399 / Investor Services 406

Investing in Managed Funds 408

Investor Uses of Managed Funds 409 / The Selection Process 410 / Measuring Performance 414

Summary 420 / Discussion Questions 421 / Problems 421 / Case Problems 423 / Excel with Spreadsheets 424 / Website Information 425

CHAPTER 13 Managing Your Own Portfolio 426

Opening Vignette 426

Constructing a Portfolio Using an Asset Allocation Scheme 427

Investor Characteristics and Objectives 427 / Portfolio Objectives and Policies 427 / Developing an Asset Allocation Scheme 428

Evaluating the Performance of Individual Investments 431

Obtaining the Necessary Data 431 / Indices of Investment Performance 432 / Measuring the Performance of Investments 432 / Comparing Performance to Investment Goals 435 / Superannuation (SMSFs) and Portfolios 436

Assessing Portfolio Performance 437

Measuring Portfolio Return 438 / Comparison of Return with Overall Market Measures 441 / Portfolio Revision 443

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Timing Transactions 444

Formula Plans 445 / Using Limit and Stop-Loss Orders 449 / Warehousing Liquidity 450 / Timing Investment Sales 450

Summary 451 / Discussion Questions 453 / Problems 454 / Case Problems 458 / Excel with Spreadsheets 460 / Website Information 461

CFA Exam Questions 462

Part Six Derivative Securities 465

CHAPTER 14 Options: Puts and Calls 466

Opening Vignette 466

Put and Call Options 467

Basic Features of Puts and Calls 467 / Options Markets 470 / Share Options 470

Options Pricing and Trading 473

The Profit Potential from Puts and Calls 473 / Intrinsic Value 474 / What Drives Options Prices? 476 / Trading Strategies 479

Share-Index and Other Types of Options 487

Share-Index Options: Contract Provisions 487 / Investment Uses 487 / Other Types of Options 489 / Contracts for Difference 490

Summary 491 / Discussion Questions 492 / Problems 492 / Case Problems 494 / Excel with Spreadsheets 495 / Website Information 496

CHAPTER 15 Commodities and Financial Futures 497

Opening Vignette 497

The Futures Market 498

Market Structure 498 / Trading in the Futures Market 500

Commodities 503

Basic Characteristics 503 / Trading Commodities 506 / Commodities and the Individual Investor 507

Financial Futures 509

The Financial Futures Market 509 / Trading Techniques 513 / Financial Futures and the Individual Investor 515 / Options on Futures 515

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Summary 517 / Discussion Questions 518 / Problems 519 / Case Problems 520 / Excel with Spreadsheets 522 / Website Information 522

CFA Exam Questions 523

Appendix A Financial Tables A-1

Index I-1

WEB CHAPTERS (at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885)

Chapter 16 Investing in Preference Shares

Chapter 17 Real Estate and Other Tangible Investments

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Preface

'**Great firms aren't great investments unless the price is right.**' These words of wisdom come from none other than Warren Buffett, who is, without question, one of the greatest investors ever. The words of Mr Buffett sum up very nicely the essence of this book—namely, to help students learn to make *informed investment decisions*, not only when buying shares, but also when investing in bonds, managed funds or any other type of investment.

The fact is, investing may sound simple, but it's not. Investors in today's turbulent financial markets confront many challenges when deciding how to invest their money. After the 2008 meltdown in financial markets, investors have become more wary of risk than they have been in many years. This book is designed to help students understand the risks inherent in investing and to give them the tools they need to answer the fundamental questions that help shape a sound investment strategy. For example, students want to know, what are the best investments for me? Should I buy individual securities or managed funds? What's the market outlook in the next few years? What about risk? Do I need professional help with my investments and can I afford it? Clearly, investors need answers to questions like these to make informed decisions.

The language, concepts, vehicles and strategies of investing are foreign to many. In order to become informed investors, students must first become conversant with the many aspects of investing. Building on that foundation, they can learn how to make informed decisions in the highly dynamic investment environment. This third edition of *Fundamentals of Investing* provides the information and guidance needed by individual investors to make such informed decisions and to achieve their investment goals.

This book meets the needs of lecturers and students in the first investments course offered at universities and colleges, professional certification programs and continuing education courses. Focusing on both individual securities and portfolios, *Fundamentals of Investing* explains how to develop, implement and monitor investment goals after considering the risk and return of both markets and investment vehicles. A conversational tone and liberal use of examples guide students through the material and demonstrate important points.

New for the Third Edition

Our adopters are interested in how we have changed the content from the previous edition. We hope that that this same information will also interest potential adopters, because it indicates our mandate to stay current in the field of investments and to continue to craft a book that will truly meet the needs of students and lecturers.

Some of the major changes made in the third edition are the following:

- All real-world data has been updated through 2008–2010, including text, tables and figures.
- New Investor Facts boxes have been added to each chapter, as well as many others that have been updated from the second edition.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

- New Ethics in Investing boxes are included in many chapters.
- A new chapter on Technical Analysis, Market Efficiency and Behavioural Finance has been added.
- Chapters on Investing in Preference Shares and Real Estate and Other Tangible Investments are now available online.
- The use of real-world data has been expanded in examples.
- Coverage of behavioural finance has been expanded, particularly (but not exclusively) in Chapter 9.
- Every chapter opener has been revised or replaced.
- A list of key terms is now included at the end of each chapter, to help students focus on the vocabulary to master. Additionally, the end-of-chapter summary and key terms are presented in an easy-to-read table that helps students focus on what they need to know.
- Websites and references have been updated, as have the questions, problems and cases.
- New Excel with Spreadsheets applications are included in the chapter-end problems.

Hallmarks of *Fundamentals of Investing*

Using information gathered from both academics and practising investment professionals, plus feedback from adopters, the third edition reflects the realities of today's investment environment. At the same time, the following characteristics provide a structured framework for successful teaching and learning.

Clear Focus on the Individual Investor

Today, most households own shares either directly or indirectly through superannuation and managed funds. Share ownership has been growing for many years and is likely to continue to do so. The focus of *Fundamentals of Investing* has always been on the individual investor. This focus gives students the information they need to develop, implement and monitor a successful investment program. It also provides students with a solid foundation of basic concepts, tools and techniques. Subsequent courses can build on that foundation by presenting the advanced concepts, tools and techniques used by institutional investors and money managers.

Comprehensive Yet Flexible Organisation

The text provides a firm foundation for learning by first describing the overall investment environment, including the various investment markets, information and transactions. Next, it presents conceptual tools needed by investors—the concepts of return and risk and the basic approaches to portfolio management. It then examines the most popular types of investments—shares, bonds and managed funds. Following this series of chapters on investment vehicles is a chapter on how to construct and administer one's own portfolio. The final section of the book focuses on derivative securities—options and futures—which require more expertise. Although the first two parts of the textbook are best covered at the start of the course, instructors can cover particular

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

investment types in just about any sequence. The comprehensive yet flexible nature of the book enables instructors to customise it to their own course structure and teaching objectives.

We have organised each chapter according to a decision-making perspective and we have always been careful to point out the pros and cons of the various vehicles and strategies we present. With this information, individual investors can select the investment actions that are most consistent with their objectives. In addition, we have presented the various investment vehicles and strategies in such a way that students learn the decision-making implications and consequences of each investment action they contemplate.

Timely Topics

Various issues and developments constantly reshape financial markets and investment vehicles. Virtually all topics in this book take into account changes in the investment environment. For example, in many chapters we've included a new feature called *Ethics in Investing*, as well as the *Investor Facts* boxes. These features highlight various aspects of market turbulence, government regulation and the changes to investment vehicles. Fundamentally, investing is about the tradeoff between risk and return, and these features serve as a reminder to students that they should not focus exclusively on an investment's returns.

Globalisation

One issue that is reshaping the world of investing is the growing globalisation of securities markets. As a result, *Fundamentals of Investing* continues to stress the global aspects of investing. We initially look at the growing importance of international markets, investing in foreign securities (directly or indirectly), international investment performance and the risks of international investing. In later chapters, we describe popular international investment opportunities and strategies as part of the coverage of each specific type of investment vehicle. This integration of international topics helps students understand the importance of maintaining a global focus when planning, building and managing an investment portfolio. Global topics are highlighted by a globe of the world icon in the margin.

Comprehensive, Integrated Learning System

Another feature of the third edition is its comprehensive and integrated learning system, which makes clear to students what they need to learn in the chapter and helps them focus their study efforts as they progress through the chapter. For more detailed discussion of the learning system, see the feature walkthrough later in the preface (beginning on page xix).

CFA Questions

We are pleased to include CFA questions in the third edition. CFA exam questions appear at the end of five of the book's six parts. Due to the nature of the material in some of the early chapters, the CFA questions for Parts One and Two are combined and appear at the end of Part Two. These questions offer students an opportunity to test their investment knowledge against that required for the CFA Level I exam. These questions are taken from the 2010 Level I curriculum and the *CFA Candidate Study*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Notes, *Level 1*, *Volume 4*, by Cengage Learning. Answers are included for immediate reinforcement.

MyFinanceLab is a fully integrated online homework and tutorial system. MyFinanceLab offers flexible instructor tools like the easy-to-use homework manager for test, quiz or homework assignments, automatic grading and a powerful online Gradebook. Students can take pre-loaded Sample Tests for each chapter and their results generate an individualised Study Plan that helps focus and maximise their study time. Students will find ample opportunities to solve problems. Also at MyFinanceLab are two complete chapters that appeared in the book in previous editions: 'Investing in Preference Shares' and 'Real Estate and Other Tangible Investments'. Please visit **www.pearson.com.au/myfinancelab** for more information.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

PROVEN TEACHING/LEARNING/MOTIVATIONAL SYSTEM

Users of *Fundamentals of Investing* have praised the effectiveness of the teaching and learning system, which has been hailed as one of its hallmarks. In the third edition we have retained and polished the system, which is driven by a set of carefully developed learning goals. Users have also praised the rich motivational framework that underpins each chapter. Key elements of the pedagogical and motivational features are illustrated and described below.

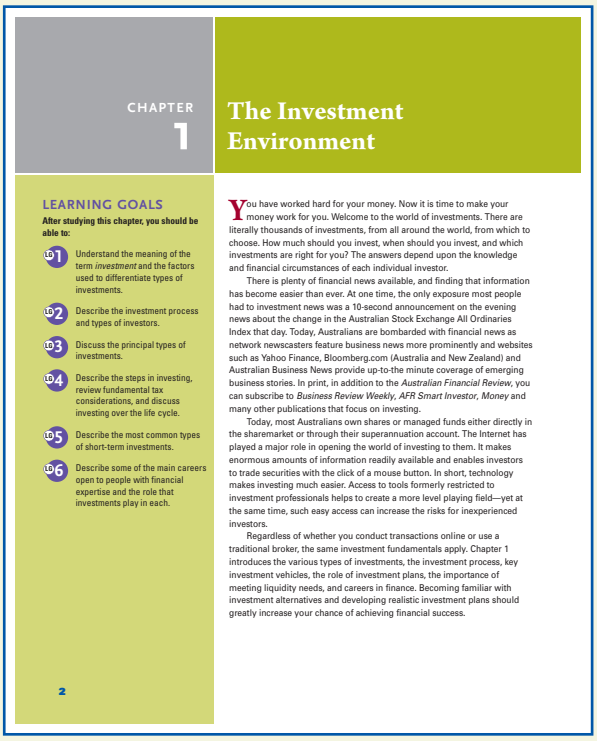
THE LEARNING GOAL SYSTEM

The Learning Goal system begins each chapter with **six Learning Goals**, labelled with numbered icons. These goals anchor the most important concepts and techniques to be learned. The Learning Goal icons are then tied to key points in the chapter's structure, including:

- First-level headings
- Summary
- Discussion Questions
- Problems
- Cases

This tightly knit structure provides a clear roadmap for students—they know what they need to learn, where they can find it, and whether they've mastered it by the end of the chapter.

An **opening vignette** sets the stage for the content that follows by focusing on an investment situation involving a real company or real event, which is in turn linked to the chapter topics. Students see the relevance of the vignette to the world of investments.



CHAPTER 1

The Investment Environment

LEARNING GOALS

After studying this chapter, you should be able to:

LO1 Understand the meaning of the term *investment* and the factors used to differentiate types of investments.

LO2 Describe the investment process and types of investors.

LO3 Discuss the principal types of investments.

LO4 Describe the steps in investing, review fundamental tax considerations, and discuss investing over the life cycle.

LO5 Describe the most common types of short-term investments.

LO6 Describe some of the main careers open to people with financial expertise and the role that investments play in each.

2

You have worked hard for your money. Now it is time to make your money work for you. Welcome to the world of investments. There are literally thousands of investments, from all around the world, from which to choose. How much should you invest, when should you invest, and which investments are right for you? The answers depend upon the knowledge and financial circumstances of each individual investor.

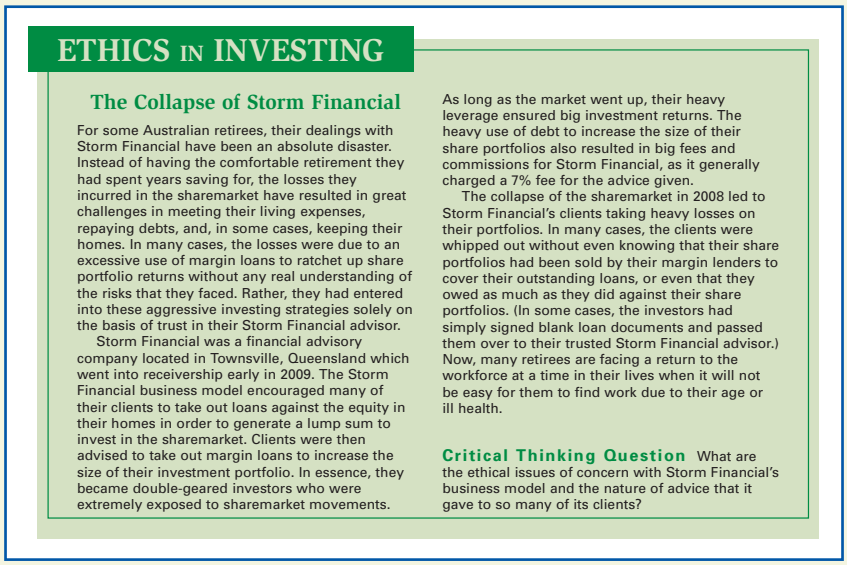
There is plenty of financial news available, and finding that information has become easier than ever. At one time, the only exposure most people had to investment news was a 10-second announcement on the evening news about the change in the Australian Stock Exchange All Ordinaries Index that day. Today, Australians are bombarded with financial news as network newscasters feature business news more prominently and websites such as Yahoo Finance, Bloomberg.com (Australia and New Zealand) and Australian Business News provide up-to-the minute coverage of emerging business stories. In print, in addition to the *Australian Financial Review*, you can subscribe to *Business Review Weekly*, *AFR Smart Investor*, *Money* and many other publications that focus on investing.

Today, most Australians own shares or managed funds either directly in the sharemarket or through their superannuation account. The Internet has played a major role in opening the world of investing to them. It makes enormous amounts of information readily available and enables investors to trade securities with the click of a mouse button. In short, technology makes investing much easier. Access to tools formerly restricted to investment professionals helps to create a more level playing field—yet at the same time, such easy access can increase the risks for inexperienced investors.

Regardless of whether you conduct transactions online or use a traditional broker, the same investment fundamentals apply. Chapter 1 introduces the various types of investments, the investment process, key investment vehicles, the role of investment plans, the importance of meeting liquidity needs, and careers in finance. Becoming familiar with investment alternatives and developing realistic investment plans should greatly increase your chance of achieving financial success.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

MORE LEARNING TOOLS



ETHICS IN INVESTING

The Collapse of Storm Financial

For some Australian retirees, their dealings with Storm Financial have been an absolute disaster. Instead of having the comfortable retirement they had spent years saving for, the losses they incurred in the sharemarket have resulted in great challenges in meeting their living expenses, repaying debts, and, in some cases, keeping their homes. In many cases, the losses were due to an excessive use of margin loans to ratchet up share portfolio returns without any real understanding of the risks that they faced. Rather, they had entered into these aggressive investing strategies solely on the basis of trust in their Storm Financial advisor.

Storm Financial was a financial advisory company located in Townsville, Queensland which went into receivership early in 2009. The Storm Financial business model encouraged many of their clients to take out loans against the equity in their homes in order to generate a lump sum to invest in the sharemarket. Clients were then advised to take out margin loans to increase the size of their investment portfolio. In essence, they became double-geared investors who were extremely exposed to sharemarket movements.

As long as the market went up, their heavy leverage ensured big investment returns. The heavy use of debt to increase the size of their share portfolios also resulted in big fees and commissions for Storm Financial, as it generally charged a 7% fee for the advice given.

The collapse of the sharemarket in 2008 led to Storm Financial's clients taking heavy losses on their portfolios. In many cases, the clients were whipped out without even knowing that their share portfolios had been sold by their margin lenders to cover their outstanding loans, or even that they owed as much as they did against their share portfolios. (In some cases, the investors had simply signed blank loan documents and passed them over to their trusted Storm Financial advisor.) Now, many retirees are facing a return to the workforce at a time in their lives when it will not be easy for them to find work due to their age or ill health.

Critical Thinking Question What are the ethical issues of concern with Storm Financial's business model and the nature of advice that it gave to so many of its clients?

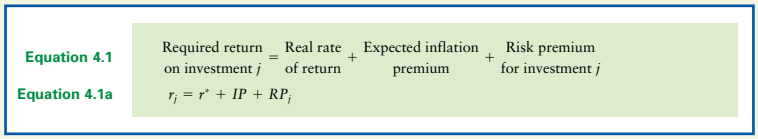
Ethics boxes—short, boxed discussions of real-life scenarios in the investments world that focus on ethics—appear in selected chapters and on the book's website. Many ethics boxes contain a Critical Thinking Question for class discussion, with guideline answers given in the Instructor's Manual.

Each chapter contains a handful of **Investor Facts**—brief sidebar items that give an interesting statistic or cite an unusual investment experience. These facts add a bit of seasoning to the concepts under review and capture a real-world flavour.

INVESTOR FACTS

MARKET MUSCLE—The total market value of a company—defined as the share price multiplied by the number of shares outstanding—is a measure of what investors think a company is worth. For many years, BHP was known as the 'Big Australian' due to its position at the top of the market capitalisation list. This position has changed hands on a number of occasions in more recent times, with other Australian companies such as National Australia Bank, News Corporation, Rio Tinto Limited, Telstra and AMP sharing the top positions for a time.

Key Equations are screened in **green** throughout the text to help readers identify the most important mathematical relationships.



Equation 4.1

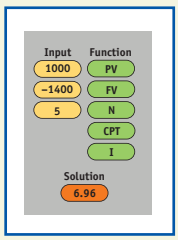
$$\text{Required return on investment } j = \text{Real rate of return} + \text{Expected inflation premium} + \text{Risk premium for investment } j$$

Equation 4.1a

$$r_j = r^* + IP + RP_j$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Calculator Keystrokes At appropriate spots in the text the student will find sections on the use of financial calculators, with marginal calculator graphics that show the inputs and functions to be used.



Concepts in Review questions appear at the end of each section of the chapter. These review questions allow students to test their understanding of each section before moving on to the next section of the chapter. Answers for these questions are available at the book's website and by review of the preceding text.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab

3.1 Discuss the impact of the Internet on the individual investor, and summarise the types of resources it provides.

3.2 Identify the main types of online investment tools. How can they help you to become a better investor?

3.3 What are some of the pros and cons of using the Internet to choose and manage your investments?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

STILL MORE LEARNING TOOLS

The **end-of-chapter summary** makes *Fundamentals of Investing* an efficient study tool by integrating chapter contents with online learning resources available in **MyFinanceLab**.

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Identify the basic types of securities markets and describe the IPO process. Short-term investment vehicles are traded in the money market; longer-term securities, such as shares and bonds, are traded in the capital market. New security issues are sold in the primary market. Once securities have been issued, investors buy and sell them in the secondary markets. The first public issue of a company's shares is called an initial public offering (IPO). The company selects a financial adviser, who assists with the pricing and sale of the shares and who may act as underwriter to the issue. A syndicate of underwriters may be formed for very large issues.

LG 2 Explain the characteristics of organised securities exchanges. Organised exchanges include the Australian Securities Exchange (ASX), the New York Stock Exchange (NYSE), foreign securities exchanges and other specialised exchanges. The organised exchanges act as secondary markets in which existing securities are traded.

LG 3 Understand the over-the-counter markets and the general conditions of securities markets. The over-the-counter (OTC) market acts as a primary market in which initial public offerings (IPOs) are made, and it also handles secondary trading in unlisted securities. It is a dealer market in which negotiation and dealer quotes, often obtained through its automated system, determine price. Market conditions are commonly classified as 'bull' or 'bear', depending on whether securities' prices are generally rising or falling.

LG 4 Review the importance of global securities markets, their performance, and the investment procedures and risks associated with foreign investments. Today, securities markets must be viewed globally.

Key Terms

ask price, *p. 30*
Australian Securities & Investments Commission (ASIC), *p. 26*
bear markets, *p. 31*
bid price, *p 30*
bull markets, *p. 31*
capital market, *p. 26*
dealers, *p. 30*
initial public offering (IPO), *p. 26*
money market, *p. 26*
Nasdaq, *p. 30*
organised securities exchanges, *p. 27*
over-the-counter (OTC) market, *p. 27*
primary market, *p. 26*
private placement, *p. 26*
public offering, *p. 26*
rights offering, *p. 26*
secondary distributions, *p. 30*
secondary market, *p. 27*
securities markets, *p. 26*
underwriting, *p. 26*
underwriting syndicate, *p. 26*

currency exchange rate, *p. 34*
currency exchange risk, *p. 34*
diversification, *p. 32*

Discussion Questions, keyed to Learning Goals, guide students to integrate, investigate and analyse the key concepts presented in the chapter. Many questions require that students apply the tools and techniques of the chapter to investment information they have obtained and then make a recommendation with regard to a specific investment strategy or vehicle. These project-type questions are far broader than the Concepts in Review questions within the chapter.

Discussion Questions

LG 1 **Q6.1** Look at the record of annualshare returns in Table 6.1 (page 176), particularly the return performance during the 1980s, 1990s and 2000–2010.

a. How would you compare the returns during the 1980s with those produced in the 1990s? Is there anything that stands out about this market? How does it compare with the market that existed from early 2000 through 2010?
b. Considering the average annual returns that have been generated over holding periods of five years or more, what rate of return do you feel is typical for the sharemarket in general? Is it unreasonable to expect this kind of return, on average, in the future? Explain.

LG 2 **Q6.2** Given the information in the quote in Figure 6.2 (page 182), answer the following questions for Stockland.

a. On what day did the trading activity occur?
b. At what price did the share sell at the end of that day?
c. What is the company's price/earnings ratio? What does that indicate?
d. What was the dividend yield?
e. What are the highest and lowest prices at which the share traded during the latest 52-week period?
f. How many shares were traded on the day quoted?

Expanded Problem Sets—offer additional review and homework opportunities and are keyed to Learning Goals. All answers/solutions are available for instructors in the Instructor's Manual.

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG 5 **P7.1** Assume you are given the following abbreviated financial statement.

	($ in millions)
Current assets	$150.0
Fixed and other assets	200.0
Total assets	$350.0
Current liabilities	$100.0
Long-term debt	50.0
Shareholders' equity	200.0
Total liabilities and equities	$350.0
Ordinary shares outstanding	10 million shares
Total revenues	$500.0
Total operating costs and expenses	435.0
Interest expense	10.0
Income taxes	20.0
Net profits	$ 35.0
Dividends paid to ordinary shareholders	$ 10.0

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 7.1 SOME FINANCIAL RATIOS ARE REAL EYE-OPENERS

LG5 LG6 Jack Simms is a resident of Ballarat, Victoria, where he is a prosperous farmer and businessman. He has also built up a sizeable portfolio of shares, which, he believes, is due to the fact that he thoroughly evaluates each security he invests in. Jack prefers to calculate his own ratios even though he could easily obtain various types of analytical reports from his stockbroker at no cost. (In fact, Peter Smith, his stockbroker, has been volunteering such services for years.)

Recently, Jack has been keeping an eye on a small chemical issue. The company, Southern Chemical Company, is big in the fertiliser business—which, not by coincidence, is something Jack knows a lot about. Not long ago, he received a copy of the company's latest financial statements (summarised here) and decided to take a closer look at the company.

Balance Sheet ($ in thousands)

Cash	$ 1 250		
Accounts receivable	8 000	Current liabilities	$10 000
Inventory	12 000	Non-current liabilities	8 000
Current assets	21 250	Shareholders' equity	12 000
Fixed and other assets	8 750		
Total	$30 000	Total	$30 000

Income Statement ($ in thousands)

Sales	$ 50 000
Cost of goods sold	25 000
Operating expenses	15 000
Operating profit	$ 10 000
Interest expense	2 500

Case Problems, keyed to the Learning Goals, encourage students to use higher-level critical thinking skills: to apply techniques presented in the chapter, to evaluate alternatives and to recommend how an investor might solve a specific problem. Again, Learning Goals show the student the chapter topics on which the case problems focus.

Excel with Spreadsheets problems, appearing at the end of all chapters, challenge students to solve financial problems and make decisions through the creation of spreadsheets. In Chapter 1 students are directed to go online to, **www.pearson.com/myfinancelab**, or **www.pearson.com/9781442532885**, where they can complete a spreadsheet tutorial, if needed. In addition, this tutorial and selected tables within the text carrying a spreadsheet icon are available in spreadsheet form on the text's website.

Excel with Spreadsheets

NOTE Excel spreadsheet exercises at the end of each chapter will assist you in learning some useful applications of this tool in the personal investing process.

In the following chapters of this text, you will be asked to solve spreadsheet problems using Microsoft Excel®. While each person's skill and experience with Excel will vary, we assume that you understand its basics. This includes entering text and numbers, copying or moving a cell, moving and copying using 'drag and drop', inserting and deleting rows and columns, and checking your spelling. The review in this chapter focuses on entering and editing data in the worksheet.

To complete the spreadsheet review, go to www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885 and to 'Student Resources'. Click on 'Spreadsheet Review'. There you will be asked to **create a spreadsheet** and perform the following tasks.

Questions

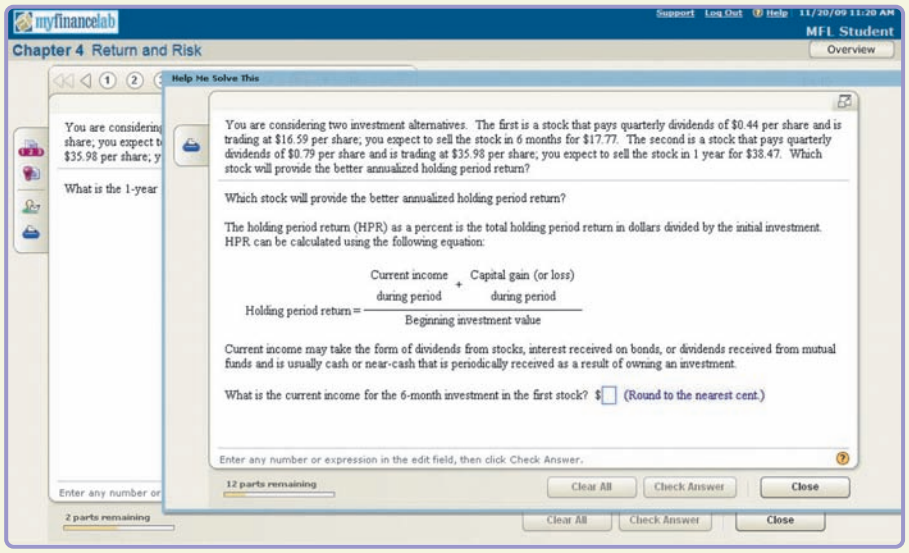
1. Add and subtract data with a formula.
2. Multiply and divide data with a formula.
3. Total cells using the sum function and calculate an average.
4. Use the average function.
5. Copy a formula using the 'drag and drop' method.

Updated for this edition, **CFA questions** from 2010 Level One Curriculum and the *CFA Candidate Study Notes, Level 1, Volume 4* (Cengage Learning) are now at the end of each part of the book, starting at Part Two.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INTERACTIVE LEARNING

My FinanceLab


myfinancelab
Support Log Out Help 11/20/09 11:20 AM
MFL Student
Chapter 4 Return and Risk
Overview
Help Me Solve This
You are considering two investment alternatives. The first is a stock that pays quarterly dividends of $0.44 per share and is trading at $16.59 per share; you expect to sell the stock in 6 months for $17.77. The second is a stock that pays quarterly dividends of $0.79 per share and is trading at $35.98 per share; you expect to sell the stock in 1 year for $38.47. Which stock will provide the better annualized holding period return?
Which stock will provide the better annualized holding period return?
The holding period return (HPR) as a percent is the total holding period return in dollars divided by the initial investment. HPR can be calculated using the following equation:
Holding period return = (Current income during period + Capital gain (or loss) during period) / Beginning investment value
Current income may take the form of dividends from stocks, interest received on bonds, or dividends received from mutual funds and is usually cash or near-cash that is periodically received as a result of owning an investment.
What is the current income for the 6-month investment in the first stock? $ (Round to the nearest cent.)
Enter any number or expression in the edit field, then click Check Answer.
12 parts remaining
Clear All
Check Answer
Close

myfinancelab is a fully integrated homework and tutorial system which solves one of the biggest teaching problems in finance courses—students learn better with lots of practice, but marking complex multipart problems is time-consuming for the instructor. In MyFinanceLab, students can work the end-of-chapter problems with algorithmically generated values for unlimited practice and instructors can create assignments that are automatically marked and recorded in an online Gradebook.

MyFinanceLab: hands-on practice, hands-off marking.

Registering for MyFinanceLab with an Access Card If your textbook came bundled with a MyFinanceLab access code, refer to the card for registration instructions.

Purchasing Access If your textbook did not come bundled with a MyFinanceLab access code, you can purchase an access code at **www.pearson.com.au/myfinancelab**.

Lecturer Access To organise a demonstration, training and/or access to MyFinanceLab, please contact your education consultant. If you are unsure of your consultant's contact details, please go to 'Contact us' at **www.pearson.com.au**.

VitalSource eText

Pearson VitalSource Editions—digital books that fit a portable lifestyle

VitalSource editions are downloadable to student computers or iPhone/iPad devices, and are accessible offline. Students can search for key concepts, words and phrases; make highlights and notes; share their notes with friends; and print five pages at a time from the digital version of the text. To get the most out of their Pearson VitalSource eText, students need to download the VitalSource bookshelf software to their personal computer, laptop or device. This software is free to download and use. Upon purchasing a Pearson VitalSource eText access code, students receive instructions on how to redeem their code and download the eText. VitalSource text access codes can be purchased from **www.mypearsonstore.com.au/vitalsource**.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Supplementary Materials

We recognise the key role of a complete and creative package of materials to supplement a basic textbook. We believe that the following materials, offered with the third edition, will enrich the investments course for both students and instructors.

Instructor's Manual

Revised by the Australian authors, the *Instructor's Manual* contains chapter outlines; lists of key concepts discussed in each chapter; detailed chapter overviews; answers/suggested answers to all Concepts in Review questions, Discussion Questions, Problems and Critical Thinking Questions (in the *Ethics in Investing* boxes); and solutions to the Case Problems.

Computerised Test Bank

Revised for the third edition, the computerised test bank includes a substantial number of new questions. Each chapter features true/false and multiple-choice questions, as well as several problems and short-essay questions. Driven by Test Generator Software (TestGen with QuizMaster), which is available for Windows and Macintosh, the test bank is fully networkable. TestGen's graphical interface enables instructors to easily view, edit and add questions; export questions to create tests; and print tests. Search and sort features let the instructor quickly locate questions and arrange them in a preferred order. QuizMaster, working with your school's computer network, automatically grades the exams, stores results on disk and allows the instructor to view or print a variety of reports.

PowerPoint Lecture Slides

To facilitate classroom presentations, PowerPoint slides of all text images and classroom lecture notes are available for Windows and Macintosh.

Acknowledgments

Many people gave their generous assistance during the development of the third Australian edition of *Fundamentals of Investing*. We believe we have delivered an innovative, informative and teachable investments text. The expertise, classroom experience and general advice of both colleagues and practitioners have been invaluable.

The following people provided extremely useful reviews and input to the third edition:

Sajid Anwar, University of the Sunshine Coast
Ewa Banasik, Swinburne University of Technology
Ruhina Karim, Charles Sturt University
Kim-Song Le, Murdoch University
Peter Lennox, University of South Australia
Bob Li, Deakin University
Raylene Pierce-Maberly, Deakin University
Antony Van Eekelen, Swinburne University of Technology
John Watson, Monash University
Marvin Wee, University of Western Australia

This Australian text recognises the outstanding contributions of Larry Gitman, Michael Joehnk and Scott Smart. All are finance educators and writers of the highest order.

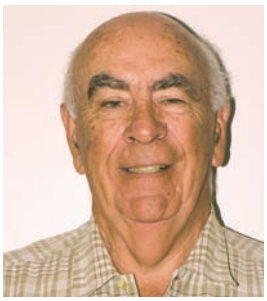
Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

We wish to express our sincere gratitude to the staff at Pearson Australia who guided us through the publication process. Special acknowledgment and thanks go to Karen Hutchings, Rebecca Pomponio and Katie Pittard for their assistance and encouragement throughout the project. We are indebted to freelance copy-editor Julie Ganner for the many hours she spent reading the manuscript and keeping us 'on task' with revisions. Her valuable suggestions have significantly improved the final product.

We sincerely welcome any comments or suggestions from lecturers and students who use this book. Please forward these to Pearson Australia.

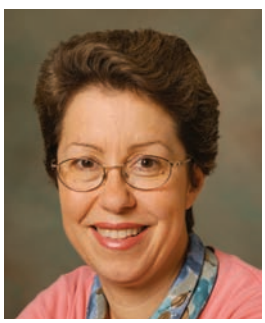
Roger H. Juchau, *University of Western Sydney*
Donald G. Ross, *Australian Catholic University*
Sue Wright, *Macquarie University*

About the Australian authors



Roger H. Juchau is Emeritus Professor of Accounting and Management at the University of Western Sydney (UWS). He has also held academic posts at Lincoln University, Macquarie University, Nepean CAE and the Queensland Institute of Technology, and was Commonwealth Foundation Fellow at the University of the South Pacific. Professor Juchau is a graduate of the University of NSW, Queensland and Sussex Universities and a Fellow of the CPA Australia and the NZ Institute of Management. He has been a visiting professor at the University of California, Davis, and the Wye College, University of London. Roger initiated and led the development of accounting programs at UWS, South Pacific, Nepean and Lincoln. He has contributed to professional and academic literature through textbook writing, research monographs and professional and academic papers.

Donald G. Ross is Professor of Finance in the Faculty of Business at the Australian Catholic University in Sydney, where he teaches undergraduate and postgraduate coursework, and doctoral students in the areas of accounting for decision making, financial management, investments and funds management, and new venture financing. He has also held academic positions at Macquarie Graduate School of Management, Macquarie University, the University of Western Sydney and St Francis Xavier University, as well as short-term visiting appointments at universities in Europe, North America and the Asia-Pacific region. Don is an active researcher, with texts, book chapters, journal articles and case studies published on a wide variety of topics in finance and accounting.



Sue Wright is an Associate Professor in the Department of Accounting and Finance at Macquarie University. Her research interests include corporate governance, earnings management, corporate performance measurement, financial reporting, business valuation and analysis, and business education. She has taught investments, corporate finance and financial statement analysis, and supervises a number of PhD students and honours students.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

PART ONE

Preparing to Invest

1 The Investment Environment

2 Markets and Transactions

3 Investment Information and Securities Transactions

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER 1

The Investment Environment

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Understand the meaning of the term *investment* and the factors used to differentiate types of investments.
- LG2 Describe the investment process and types of investors.
- LG3 Discuss the principal types of investments.
- LG4 Describe the steps in investing, review fundamental tax considerations, and discuss investing over the life cycle.
- LG5 Describe the most common types of short-term investments.
- LG6 Describe some of the main careers open to people with financial expertise and the role that investments play in each.

You have worked hard for your money. Now it is time to make your money work for you. Welcome to the world of investments. There are literally thousands of investments, from all around the world, from which to choose. How much should you invest, when should you invest, and which investments are right for you? The answers depend upon the knowledge and financial circumstances of each individual investor.

There is plenty of financial news available, and finding that information has become easier than ever. At one time, the only exposure most people had to investment news was a 10-second announcement on the evening news about the change in the Australian Stock Exchange All Ordinaries Index that day. Today, Australians are bombarded with financial news as network newscasters feature business news more prominently and websites such as Yahoo!7 Finance, Bloomberg.com (Australia and New Zealand) and Australian Business News provide up-to-the minute coverage of emerging business stories. In print, in addition to the *Australian Financial Review*, you can subscribe to *Business Review Weekly*, *AFR Smart Investor*, *Money* and many other publications that focus on investing.

Today, most Australians own shares or managed funds either directly in the sharemarket or through their superannuation account. The Internet has played a major role in opening the world of investing to them. It makes enormous amounts of information readily available and enables investors to trade securities with the click of a mouse button. In short, technology makes investing much easier. Access to tools formerly restricted to investment professionals helps to create a more level playing field—yet at the same time, such easy access can increase the risks for inexperienced investors.

Regardless of whether you conduct transactions online or use a traditional broker, the same investment fundamentals apply. Chapter 1 introduces the various types of investments, the investment process, key investment vehicles, the role of investment plans, the importance of meeting liquidity needs, and careers in finance. Becoming familiar with investment alternatives and developing realistic investment plans should greatly increase your chance of achieving financial success.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Investments and the Investment Process

LG1 LG2

NOTE The Learning Goals shown at the beginning of the chapter are keyed to text discussions using these icons.

You are probably already an investor. If you have money in a savings account, you already have at least one investment to your name. An **investment** is simply any asset into which funds can be placed with the expectation that it will generate positive income and/or preserve or increase its value.

The rewards, or **returns**, from investing come in two basic forms: income and increased value. Money invested in a savings account provides *income* in the form of periodic interest payments. An ordinary share also provides income (in the form of dividends), but investors often buy shares because they expect their price to rise. That is, ordinary shares offer both income and the chance of an *increased value*. Since 1900, the average annual return on a savings account has been a little more than 4%. The average annual return on ordinary shares has been just over 13%. Of course, during major market downturns (such as the one that occurred in 2008) the returns on nearly all investment vehicles fall well below these long-term historical averages.

investment
any vehicle into which funds can be placed with the expectation that it will generate positive income and/or preserve or increase its value.

returns
the rewards from investing received as current income and/or increased value.

Is cash placed in a simple (no-interest) cheque account an investment? No, because it fails both tests of the definition: it does not provide added income, nor does its value increase. In fact, over time, inflation erodes the purchasing power of money left in a non-interest-bearing cheque account.

We begin our study of investments by looking at types of investments and at the structure of the investment process.

Types of Investments

When you invest, the organisation in which you invest—whether it is a company or a government entity—offers you an expected future benefit in exchange for the use of your funds. Organisations compete for the use of your funds. The one that will get your investment dollars is the one that offers a benefit which you judge to be better than any competitor offers. Different investors judge benefits differently. As a result, investments of every type are available, from 'sure things', such as earning 4% interest on your bank savings account, to the possibility of tripling your money quickly by investing in newly issued biotech shares. The investments you choose will depend on your resources, your goals and your willingness to take risk. We can differentiate types of investments on the basis of a number of factors.

NOTE Investor Facts offer interesting or entertaining titbits of information.

securities
investments that represent evidence of debt or ownership or the legal right to acquire or sell an ownership interest.

INVESTOR FACTS

STAMP OF APPROVAL—Researchers have estimated that from 1900 to 2008, investing in collectible British stamps produced an average annual return of 7.5%, higher than the rate of return one would have earned on British Government bonds over the same period. Moreover, in 2008, as sharemarkets around the world plummeted, the prices of British collectible stamps surged 38.8%!
(*Source:* Adapted from Elroy Dimson and Christophe Spaenjers 2009, 'Ex-post: The Investment Performance of Collectible Stamps', CEPR Discussion Paper No. 2009-64, August.)

Securities or Property **Securities** are investments issued by companies, governments or other organisations that represent a financial claim on the resources of the issuer. The most common types of securities are shares and bonds, but more exotic types, such as share options, are available as well. The focus of this book is primarily on the most basic types of securities, particularly ordinary shares.

Property, on the other hand, consists of investments in real property or tangible personal property. *Real property* refers to land, buildings and that which is permanently affixed to the land. *Tangible personal property* includes items such as gold, artwork, antiques and other collectibles.

Direct or Indirect A **direct investment** is one in which an investor directly acquires a claim on a security or property. If you buy ordinary shares in a company such as BHP Billiton, then you have made a direct investment, and you are a part owner of that company. Direct ownership of ordinary shares has been on the decline for many years in most of the world's larger

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

property
investments in real property or in tangible personal property.

direct investment
an investment in which an investor directly acquires a claim on a security or property.

indirect investment
an investment made in a portfolio, or group of securities or property.

economies. Figure 1.1 shows the percentage of direct ownership of ordinary shares by households in several different countries as of 2006.

An **indirect investment** is an investment in a collection of securities or properties managed by a professional investor. For example, when individuals send their money to a managed fund company such as AMP or Colonial First State, they are making indirect investments in the assets held by these managed funds. In Australia, indirect ownership through managed funds and life insurance companies on behalf of more than 10 million Australians totals more than $1 trillion—an amount larger than the GDP of Australia and the capitalisation of the Australian Securities Exchange (ASX). Indeed, Australia now has the fourth largest pool of managed funds in the world.*

debt
funds lent in exchange for interest income and the promised repayment of the loan at a given future date.

equity
ongoing ownership in a specific business or property.

derivative securities
securities that are structured to exhibit characteristics similar to those of an underlying security or asset and that derive their value from the underlying security or asset.

Debt, Equity or Derivative Securities Most investments fall into one of two broad categories: debt or equity. **Debt** is simply a loan that obligates the borrower to make periodic interest payments and to repay the full amount of the loan by some future date. When companies or governments need to borrow money, they issue debt instruments called *bonds*. When you buy a debt instrument such as a bond, in effect you lend money to the issuer. The issuer agrees to pay you interest for a specified time, at the end of which the issuer will repay the original loan.

Equity represents ongoing ownership in a business or property. An equity investment may be held as a security or by title to a specific property. The most common type of equity security is the *ordinary share*.

Derivative securities are neither debt nor equity. Instead, they derive their value from an underlying security or asset. Share *options* are an example. A share option is an investment that grants the right to purchase (or sell) shares in a company at a fixed price for a limited period of time. The value of this option depends on the market price of the underlying shares.

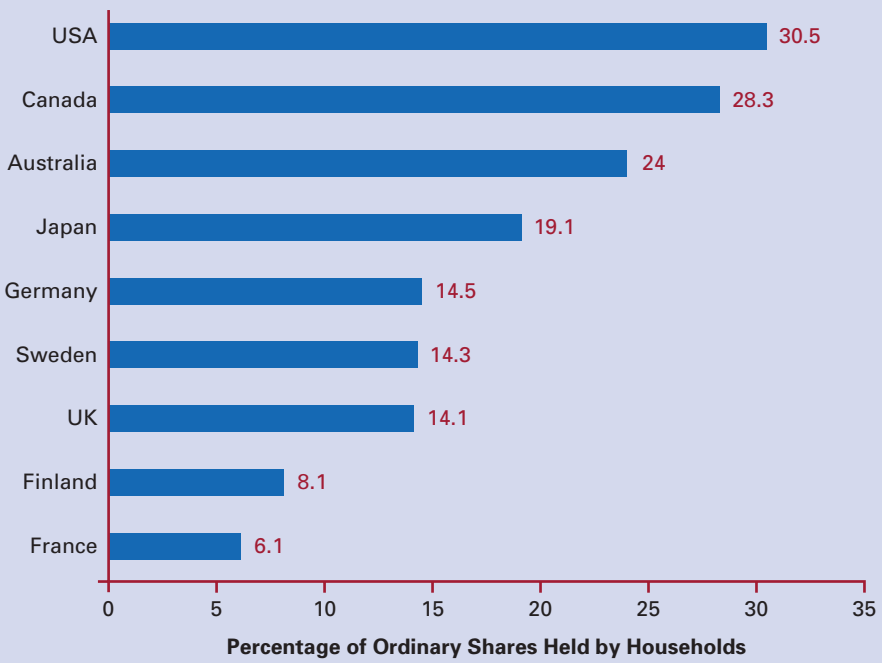
* Financial Services Council 2010, <ww.ifsa.com.au>, accessed 25 May 2010.

FIGURE 1.1

Direct Ownership of Ordinary Shares by Households

The figure shows the percentage of ordinary shares in each country that is owned directly by households. In most countries, households' direct ownership accounts for less than one-quarter of listed ordinary shares in the country.

(*Source:* Kristian Rydqvist, Joshua Spizman and Ilya Strebulav 2009, 'The Evaluation of Aggregate Stock Ownership: A Unified Explanation', CEPR Discussion Paper No. 7356, July.)



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

risk
the chance that an investment's value or return will be less than its expected value or return.

Low- or High-Risk Investments Investments also differ on the basis of risk. **Risk** reflects the uncertainty surrounding the return that a particular investment will generate. The broader the range of possible values or returns associated with an investment, the greater is its risk.

Investors are confronted with a continuum of investments that range from low risk to high risk. For example, shares are generally considered riskier than bonds because share returns vary over a much wider range and are harder to predict than are bond returns. However, it is not difficult to find high-risk bonds that are riskier than the shares of a financially sound company.

Low-risk investments provide a relatively predictable, but also a relatively low, return. *High-risk investments* provide much higher returns, on average, but they also have the potential for much larger losses. **Speculation** offers highly uncertain returns, and because of this greater risk, the returns associated with speculation are expected to be greater.

speculation
the purchase of high-risk investment vehicles that offer highly uncertain earnings or future value.

Short- or Long-Term Investments The life of an investment can be described as either short or long term. **Short-term investments** typically mature within one year. **Long-term investments** are those with longer maturities or, like ordinary shares, with no maturity at all.

short-term investments
investments that typically mature within one year.

long-term investments
investments with maturities longer than one year or with no maturity at all.

Domestic or Foreign Most investments are **domestic investments**: the debt, equity and derivative securities of Australian-based companies and governments. However, investors also look for **foreign investments** (both direct and indirect) that might offer more attractive returns than purely domestic investments. Information on foreign companies is now readily available, and it is relatively easy to make foreign investments.

NOTE Discussion of international investing is highlighted by this icon.

The Structure of the Investment Process

The investment process brings together *suppliers* who have extra funds and *demanders* who need funds. Suppliers and demanders of funds usually come together by means of a financial institution or a financial market. **Financial institutions** are organisations, such as banks and insurance companies, that pool the savings of governments, businesses and individuals and channel them into loans and other types of assets. **Financial markets** are forums in which suppliers and demanders of funds trade financial assets, typically with the assistance of intermediaries such as securities brokers and dealers. All types of investments, including shares, bonds, commodities and foreign currencies, trade in financial markets.

domestic investments
debt, equity, derivative securities and property of Australian-based companies.

foreign investments
debt, equity, derivative securities and property of foreign-based companies.

financial institutions
organisations that channel the savings of governments, businesses and individuals into loans or investments.

financial markets
forums in which suppliers and demanders of funds make financial transactions.

The dominant financial market in Australia is the *securities market*. It includes sharemarkets, bond markets and options markets. Similar markets exist in most major economies throughout the world. Their common feature is that the price of an investment vehicle at any point in time results from an equilibrium between the forces of supply and demand. As new information about returns and risk becomes available, the changes in supply and demand may result in a new equilibrium or *market price*. Financial markets streamline the process of bringing together suppliers and demanders of funds, and they allow transactions to be made quickly and at a fair price. They also publicise security prices.

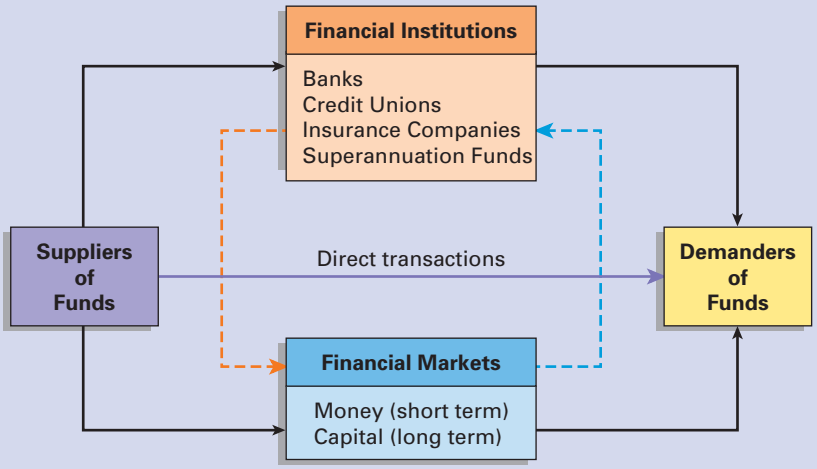
Figure 1.2 is a diagram of the investment process. Note that the suppliers of funds may transfer their resources to the demanders through financial institutions, through financial markets, or in direct transactions. As the broken lines show, financial institutions can participate in financial markets as either suppliers or demanders of funds.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 1.2

The Investment Process

Financial institutions participate in the financial markets as well as transfer funds between suppliers and demanders. Although the arrows go only from suppliers to demanders, for some transactions (e.g. the sale of a bond) the principal amount borrowed by the demander from the supplier (the lender) is eventually returned.



Suppliers and Demanders of Funds Governments, businesses and individuals are the key participants in the investment process. Each may act as a supplier or a demander of funds. For the economy to grow and prosper, funds must flow to individuals and businesses with attractive investment opportunities. If individuals began suddenly hoarding their excess funds rather than putting them to work in financial institutions and markets, then organisations in need of funds would have difficulty obtaining them. As a result, government spending, business expansion and consumer purchases would decline and economic activity would slow.

Government All levels of government—Commonwealth, state and local—require vast sums of money to finance long-term projects related to the construction of public facilities and to keep the government running. Occasionally, governments run budget surpluses, allowing them to invest excess funds. In general, however, government is a *net demander of funds*—meaning that it demands more funds than it supplies because government spending often exceeds tax revenues. The huge amount of money borrowed by governments has the potential to 'crowd out' private investment by increasing the cost and decreasing the amount of funds available to individuals and businesses.

Business Most companies require large sums of money to support operations. Like government, business has both long- and short-term financial needs. Businesses issue a wide variety of debt and equity securities to finance these needs. They also supply funds when they have excess cash. But like government, companies in general are *net demanders of funds*.

Individuals You might be surprised to learn that even though individuals demand funds in the form of loans to pay for property (e.g. houses and cars) and education, as a group, individuals are *net suppliers of funds*. Through their savings, individuals put more into the financial system than they take out.

Types of Investors When we refer to individuals in the investment process, we do so to differentiate households from government and business. We can further characterise the participation of individuals in the investment process in terms of who manages the funds. **Individual investors** manage their own funds to achieve their financial goals.

individual investors
investors who manage their own funds.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Individual investors usually concentrate on earning a return on idle funds, building a source of retirement income and providing security for their families.

institutional investors investment professionals paid to manage other people's money.

Individuals who lack the time or expertise to make investment decisions often employ **institutional investors**—investment professionals who earn their living by managing other people's money. These professionals trade large volumes of securities for individuals, businesses and governments. Institutional investors include financial institutions such as banks, life insurance companies, managed funds and superannuation funds. For example, a life insurance company invests the premiums it receives from policyholders to earn returns that will cover death benefits paid to beneficiaries.

Both individual and institutional investors apply similar fundamental principles when deciding how to invest money. However, institutional investors generally control larger sums of money and have more sophisticated analytical skills than do most individual investors. *The information presented in this textbook is aimed primarily at individual investors*. It represents only the first step towards developing the expertise needed to qualify as an institutional investor.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

NOTE The Concepts in Review questions at the end of each text section encourage you, before you move on, to test your understanding of the material you've just read.

1.1 Define the term *investment*, and explain why individuals invest.

1.2 Differentiate among the following types of investments, and cite an example of each:

a. securities and property investments

b. direct and indirect investments

c. debt, equity and derivative securities

d. short-term and long-term investments

1.3 Define the term *risk*, and explain how risk is used to differentiate among investments.

1.4 What are *foreign investments*, and what role do they play today for the individual investor?

1.5 Describe the structure of the overall investment process. Explain the role played by *financial institutions* and *financial markets*.

1.6 Classify the role of (a) government, (b) business, and (c) individuals as net suppliers or net demanders of funds.

1.7 Differentiate between *individual investors* and *institutional investors*.

Investment Vehicles

LG 3

A wide variety of investments is available to individual investors. Investments differ in terms of maturities (lives), costs, return and risk characteristics, and tax considerations. We devote the bulk of this book—Chapters 6 through 15—to describing the characteristics, special features, returns and risks, and possible investment strategies of the vehicles available to individual investors. Here we will introduce these investment vehicles. Table 1.1 (on page 8) summarises the information presented in this section.

Short-Term Investments

Short-term investments include savings instruments that usually have lives of one year or less. Short-term vehicles generally carry little risk. Investors use these instruments as

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 1.1 Major Types of Investments

Type	Description	Examples	Where Covered in This Book
Short-term	Savings instruments with lives of one year or less. Used to warehouse idle funds and to provide liquidity	Deposit accounts, certificates of deposit (CDs), commercial paper, banker's acceptances, money market managed funds	Ch. 1
Ordinary shares	Equity investments that represent ownership in a corporation		Chs 6–9
Fixed-income securities	Investments that make fixed cash payments at regular intervals	Bonds Convertible securities Preference shares	Chs 10–11 Ch. 10 Ch. 16
Managed funds	Companies that pool money from many different investors and invest funds in a diversified portfolio of securities		Ch. 12
Derivatives	Securities that are neither debt nor equity but are structured to exhibit the characteristics of the underlying securities or assets from which they derive their value	Options Futures	Ch. 14 Ch. 15
Miscellaneous	Various other investment vehicles that are widely used by investors	Real estate Tangibles	Ch. 17 Ch. 17

a temporary 'warehouse' for idle funds before transferring the money into a long-term investment. Short-term investments are also popular among conservative investors who may be reluctant to lock up their funds in long-term assets such as shares or bonds.

Short-term investments also provide **liquidity**. That is, they can be converted into cash quickly and with little or no loss in value. Provision for liquidity is an important part of any financial plan. We discuss the role of short-term vehicles in financial planning and the key features of the most popular short-term vehicles later in this chapter.

liquidity
the ability of an investment to be converted into cash quickly and with little or no loss in value.

Ordinary Shares

Ordinary shares are an equity investment that represents ownership in a corporation. Each ordinary share represents a fractional ownership interest in the company. For example, one ordinary share in a corporation that has 10 000 shares outstanding would represent 1/10 000 ownership interest. Next to short-term investments and residential real estate, ordinary shares are the most popular form of investment vehicle. Today, most Australian households own some ordinary shares, either directly or indirectly.

The return on investment in ordinary shares comes from two sources: dividends and capital gains. **Dividends** are payments the corporation makes to its shareholders, usually on an interim (six-month) and final (end-of-year) basis. **Capital gains** result from selling the shares (or any asset) at a price that *exceeds* its original purchase price.

ordinary shares
equity investment representing ownership in a corporation; each share represents a fractional ownership interest in the company.

dividends
periodic payments made by corporations to their shareholders.

capital gains
the amount by which the sale price of an asset exceeds its purchase price.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

For example, say you purchased a single ordinary share of Commonwealth Bank of Australia (CBA) for $30 on 1 January 2009. During 2009, you received $2.35 in cash dividends. At the end of the year, you sold the share for $55. You earned $2.35 in dividends and $25 in capital gains ($55 sale price – $30 purchase price) for a total return of $27.35. On a percentage basis, the return on CBA shares in 2009 was an amazing 91.1% ($27.35 ÷ $30). As mentioned earlier, since 1900 the average annual rate of return on ordinary shares has been a little more than 13%, so 2009 was a great year for the CBA's shareholders. In some respects, 2009's stellar performance was a reward for those CBA shareholders who held on after seeing their CBA shares lose 45% of their value in 2008.

Fixed-Income Securities

fixed-income securities
investment vehicles that offer a fixed periodic return.

Fixed-income securities are investments that offer a fixed, periodic cash payment. Some offer contractually guaranteed returns. Others have specified, but not guaranteed, returns. Because of their fixed returns, fixed-income securities tend to be popular during periods of high interest rates when investors seek to 'lock in' high returns. The key forms of fixed-income securities are bonds, convertible securities and preference shares.

bonds
long-term debt instruments (IOUs), issued by corporations and governments, that offer a known interest return plus return of the bond's principal amount at maturity.

Bonds **Bonds** are long-term debt instruments (IOUs) issued by corporations and governments. A bondholder has a contractual right to receive periodic interest payments plus return of the bond's *face value* (the stated value given on the certificate) at maturity (typically five to 10 years).

If you purchased a $1000 bond paying 6% interest in semi-annual instalments, you would receive $30 in interest every six months. At maturity you would receive the $1000 face value of the bond. Depending on the bond, you may be able to buy or sell it prior to maturity.

Since 1900, the average annual rate of return on long-term Commonwealth Government bonds has been about 6.1%. Because they are not backed by the full faith and credit of the Commonwealth Government, corporate bonds are riskier and, therefore, tend to offer slightly higher returns than government bonds provide.

convertible security
a fixed-income obligation (bond, note or preference share) with a feature permitting conversion into a specified number of shares.

Convertible Securities A **convertible security** is a special type of fixed-income obligation. It has a feature permitting the investor to convert it into a specified number of ordinary shares. Convertibles provide the fixed-income benefit of a bond (interest) while offering the price-appreciation (capital gain) potential of ordinary shares.

preference shares
ownership interest in a corporation that has a stated dividend rate, payment of which is given preference over the ordinary share dividends of the same corporation.

Preference shares Like ordinary shares, **preference shares** represent an ownership interest in a corporation and have no maturity date. Unlike ordinary shares, preference shares have a fixed dividend rate. Companies are generally required to pay dividends on preference shares before they are allowed to pay dividends on their ordinary shares. Furthermore, if a company is having financial difficulties and decides to stop paying preference dividends, it must usually make up all of the dividend payments that it skipped before paying dividends on ordinary shares. Investors typically purchase preference shares for the dividends they pay, but they may also provide capital gains.

managed fund
an institution that raises money from fund investors and invests in and professionally manages a diversified portfolio of securities or real estate.

Managed Funds

A company that pools money from many different investors and invests the funds in a diversified portfolio of shares or bonds is called a **managed fund**. Investors in the fund own an interest in the fund's collection of securities. When investors send money to a

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

managed fund, they literally buy shares in the fund (as opposed to shares in the companies in which the fund invests), and the prices of the managed fund shares reflect the value of the assets that the fund holds. Because managed funds provide an inexpensive means for investors to hold well-diversified and professionally managed portfolios of securities, the managed fund industry has experienced tremendous growth. **Money market managed funds** (also called **money funds**) are managed funds that invest solely in short-term investment vehicles.

money market managed funds (money funds)
managed funds that invest solely in short-term investment vehicles.

Hedge Funds

hedge funds
managed funds that operate in a variety of markets using a variety of investment strategies which are generally riskier in nature in order to secure higher returns.

Like managed funds, **hedge funds** are investment funds that pool resources from many different investors and invest those funds in securities. Hedge funds are generally open to a narrower group of investors than are managed funds. For example, the minimum investment required by a managed fund might be a few hundred dollars whereas the minimum investment required to participate in a hedge fund runs into the tens of thousands of dollars.

Hedge funds are not as closely regulated as managed funds, and they tend to invest in riskier and less liquid securities. The very name 'hedge fund' suggests that these funds try to limit or hedge the risks that they take, and, indeed, some hedge funds do operate with that goal in mind. However, some hedge funds adopt very high-risk investment strategies. Nonetheless, the hedge fund industry experienced dramatic growth in the last decade.

Derivative Securities

As noted earlier, *derivative securities* derive their value from an underlying security or asset. Many derivatives are among the most risky financial assets because they are designed to magnify price changes of the underlying asset. For example, when the price of oil moves up or down by $1 per barrel, the value of an oil futures contract moves in the same direction … but by $1000 rather than $1. Investors may buy or sell derivatives to speculate on the future movements of another asset, but corporations also buy and sell derivatives to hedge against some of the risks they face. For example, a cereal company may purchase wheat futures contracts as a kind of insurance against the possibility that wheat prices will rise.

options
securities that give the investor an opportunity to sell or buy another security or property at a specified price over a given period of time.

futures
legally binding obligations stipulating that the sellers of such contracts will make delivery and the buyers of such contracts will take delivery of a specified commodity or financial instrument at some specific date in the future, at a price agreed on at the time the contract is sold.

Options **Options** are securities that give the investor an opportunity to sell or buy another security at a specified price over a given period of time. For example, investors can purchase options to take advantage of an anticipated change in the price of ordinary shares. However, the purchaser of an option is not guaranteed a return and could even lose the entire amount invested if the option does not become attractive enough to use. Two common types of options are *puts* and *calls*.

Futures **Futures** are legally binding obligations stipulating that the seller of the futures contract will make delivery and the buyer of the contract will take delivery of an asset at some specific date and at a price agreed on at the time the contract is sold. Examples of *commodities futures* traded on the ASX include wool and cattle contracts. Examples of *financial futures* are contracts for 90-day bank bills, three- and 10-year bonds and ASX shares indices. Trading in commodity and financial futures is generally a highly specialised, high-risk proposition.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Other Popular Investments

real estate
entities such as residential homes, vacant land and income property.

Real estate consists of assets such as residential homes, raw land and a variety of forms of income property, including warehouses, office and apartment buildings and shopping centres. The appeal of real estate investment is the potential returns in the form of rental income, tax write-offs and capital gains.

tangibles
investment assets, other than real estate, that can be seen or touched.

Tangibles are investment assets, other than real estate, that can be seen or touched. They include gold and other precious metals, gemstones and collectibles such as coins, stamps, artwork and antiques. People purchase these assets as investments in anticipation of price increases.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

1.8 What are *short-term investments?* How do they provide *liquidity?*

1.9 What are *ordinary shares,* and what are their two sources of potential return?

1.10 Briefly define and differentiate among the following investments. Which offer fixed returns? Which are derivative securities? Which offer professional investment management?

a. Bonds
b. Convertible securities
c. Preference shares
d. Managed funds
e. Hedge funds
f. Options
g. Futures

Making Investment Plans

LG 4

Investing can be carried out in a logical progression of steps. Here we outline those steps and then consider three other key aspects of making your own investment plans: the impact of personal taxes, your stage in the life cycle, and the changing economic environment.

Steps in Investing

Investing can be conducted on a strictly intuitive basis or on the basis of plans carefully developed to achieve specific goals. Evidence favours the planned approach. It begins with establishing a set of overall financial goals and then developing and executing an investment program consistent with those goals. The following overview of the steps in investing provides a framework for the concepts, tools and techniques presented throughout the book.

Step 1: Meeting Investment Prerequisites Before investing, you must make certain that you have adequately provided for the *necessities of life*. This includes funds for housing, food, transportation, taxes and clothing. In addition, you should have a pool of easily accessible funds for meeting emergency cash needs.

Another prerequisite is adequate protection against various 'common' risks. Protection against such risks can be acquired through life, health, property and liability insurance.

investment goals
the financial goals that one wishes to achieve by investing.

Step 2: Establishing Investment Goals Once you have satisfied the prerequisites, the next step is to establish *investment goals*. **Investment goals** are the financial objectives

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

you wish to achieve by investing. Clearly, your investment goals will determine the types of investments you will make. Common investment goals include:

1. *Accumulating retirement funds*. Accumulating funds for retirement is the *single most important reason for investing*. The earlier in life you assess your retirement needs, the greater your chance of accumulating sufficient funds to meet them.
2. *Enhancing income*. Investments enhance income by earning dividends or interest. Retirees frequently choose investments offering *high income at low risk*.
3. *Saving for major expenditures*. Families often put aside money over the years to accumulate the funds needed for major expenditures such as a downpayment on a home, travel, and capital to start a business.
4. *Sheltering income from taxes*. Australian income tax law contains provisions that allow individuals to either defer or avoid paying personal income taxes on certain types of investments.

investment plan
a written document describing how funds will be invested and specifying the target date for achievement of each investment goal and the amount of tolerable risk.

Step 3: Adopting an Investment Plan Once you have established your general goals, you should adopt an **investment plan**—a written document describing how you will invest funds. You can develop a series of supporting investment goals for each long-term goal. For each goal, specify the target date for achieving it and the amount of tolerable risk. The more specific you can be in your statement of investment goals, the easier it will be to establish an investment plan consistent with your goals.

Step 4: Evaluating Investment Vehicles Next you will want to evaluate investments by assessing the potential return and risk of each investment option. (Chapter 4 offers a general discussion of the procedures for measuring these key dimensions of potential investments.)

Step 5: Selecting Suitable Investments You now gather additional information and use it to select specific investments consistent with your goals. You must assess factors such as expected return, risk and tax considerations. Careful selection of investment vehicles is essential to successful investing.

portfolio
a collection of securities or properties, typically constructed to meet one or more investment goals.

diversification
the process of including a number of different investment vehicles in a portfolio to reduce risk and/or increase return.

Step 6: Constructing a Diversified Portfolio To achieve your investment goals, you will assemble an investment **portfolio** of suitable investments. You will use **diversification**, the inclusion of a number of different investments in a portfolio, to earn higher returns, to reduce risk, or to do a little of both. Diversification is the financial term for the age-old advice, 'Don't put all your eggs in one basket'. (Chapter 5 includes discussions of diversification and other modern portfolio concepts.)

Many individual investors buy managed funds to achieve diversification and receive the benefit of professional management (see Chapter 12); others will construct and manage their own portfolios (see Chapter 13).

Step 7: Managing the Portfolio Once you have constructed your portfolio, you should measure its actual behaviour in relation to expected performance. If the investment results are not consistent with your objectives, you may need to take corrective action.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Considering Personal Taxes

A knowledge of the tax laws can help you reduce taxes and increase the amount of after-tax dollars available for investing. Two forms of taxation are particularly important to Australian investors: income taxes and property taxes.

Income tax is the major form of personal taxation in Australia. Individuals who are resident in Australia for tax purposes pay income tax on their taxable income (in excess of the tax-free threshold of $6000) at rates ranging from 15% to 45%. The actual tax rate they incur on their highest dollar of taxable income (their marginal tax rate) depends on how much they earn, with the higher income brackets carrying higher marginal tax rates. Most Australians pay no more than 30% tax on their income, as higher marginal rates of tax occur only on taxable incomes in excess of $80 000. Australian residents are also subject to the Medicare Levy of 1.5% of their taxable income, which is used to fund medical services for Australians.

Income taxes have a great impact on the returns that investors earn from security investments. Investors who earn interest income are generally required to pay tax at their marginal tax rate on their interest income. This treatment is much more onerous than that for the dividend income received by share investors. These investors are given 'franking credits' for the income taxes already paid by the corporation—a concession that typically reduces the investor's marginal tax rate on dividend income by 30%. Share investors also receive a big break on their income from a gain in the value of their shares—called a *capital gain*—as only half of the capital gain is taxable income in Australia. Moreover, the investor is only required to pay income tax when the capital gain is 'realised' through the sale of the shares at a price higher than their original purchase price. As long as the shares are not sold, any unrealised capital gain is not taxed—regardless of how long the shares have been held or how high the share price goes. Clearly, avoiding income taxes by holding your 'winners' is a great tax avoidance strategy.

Property taxes can have a sizeable impact on real estate and other forms of property investment.

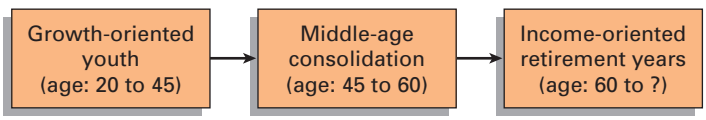
tax planning
the development of strategies that will defer and minimise an individual's level of taxes over the long run.

Investments and Taxes The opportunities created by the tax laws make tax planning important in the investment process. **Tax planning** involves looking at your earnings, both current and projected, and developing strategies that will defer and minimise the level of taxes. The tax plan should guide your investment activities so that, over the long run, you will achieve maximum after-tax returns for an acceptable level of risk.

For example, the fact that capital gains are not taxed until actually realised allows you to defer tax payments on them as well as control the timing of these payments. However, investments that are likely to lead to capital gains income generally have higher risk than those that provide only current investment income. Therefore, the choice of investments cannot be made solely on the basis of the possible reduction of tax payments. The levels of both return and risk need to be viewed in light of their tax effects. *It is the after-tax return and associated risk that matter.*

Investing Over the Life Cycle

Investors tend to follow different investment philosophies as they move through different stages of the life cycle. Generally speaking, most investors tend to be more aggressive when they're young and more conservative as they grow older. Typically, investors move through these investment stages:



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

TAX BITE—If you were to start now and invest $2000 per year for 30 years, then you would accumulate about $245 000 at the end of the period, assuming an 8% average compounded annual return *and no taxation*. However, if you were to invest the same amount of money in a taxable account, then you would accumulate only $152 000, assuming an average tax rate of 31.5%. Because of the impact of compounding, the taxed account accumulates 38% less money than the tax-free investment.

Most young investors, in their twenties and thirties, tend to prefer growth-oriented investments that stress *capital gains* rather than current income. Often young investors don't have much in the way of investable funds, so capital gains are viewed as the quickest (if not necessarily the surest) way to build capital. Young investors tend to favour growth-oriented and speculative vehicles, particularly high-risk ordinary shares.

As investors approach the middle-age consolidation stage of life (the mid-forties), family demands and responsibilities such as educational expenses and retirement contributions become more important. The whole portfolio goes through a transition to *higher quality securities*. Low-risk growth and income shares, high-grade bonds, preference shares, convertibles and managed funds are all widely used at this stage.

Finally, when investors approach their retirement years, preservation of capital and current income become the principal concerns. A secure, high level of income is paramount. Capital gains are viewed as merely a pleasant, occasional by-product of investing. The investment portfolio now becomes *highly conservative*. It consists of low-risk income shares and managed funds, high-yielding government bonds, quality corporate bonds, bank certificates of deposit (CDs) and other short-term vehicles. At this stage, investors reap the rewards of a lifetime of saving and investing.

Investments and the Business Cycle

Ordinary shares and other equity-related securities (convertible securities, managed funds, options and shares-index futures) are highly responsive to conditions in the economy. The *business cycle* refers to the recurring sequence of growth and decline, boom and recession, that characterises the economy. The business cycle reflects the current status of a variety of economic variables, including gross domestic product (GDP), industrial production, personal disposable income, the unemployment rate and more.

A strong economy is reflected in an expanding business cycle. Shares tend to be a leading indicator of the business cycle, meaning that share prices tend to rise prior to periods when business is good and profits are up. Growth-oriented and speculative shares tend to do especially well in strong markets. To a lesser extent, so do low-risk and income-oriented shares. In contrast, share values often fall several months before periods when economic activity is declining. The reason that shares tend to move ahead of changes in the business cycle is that share prices reflect investors' beliefs about the future prospects of companies. When investors believe that business conditions will deteriorate, share prices will fall even before those poor business conditions materialise. Of course, the same thing happens in reverse when investors believe the economy will perform better. Share prices rise in anticipation of strong future economic performance.

Bonds and other forms of fixed-income securities (bond funds and preference shares) are also sensitive to the business cycle because they are highly sensitive to movements in interest rates. In fact, interest rates represent the single most important variable in determining bond price behaviour and returns to investors. Interest rates and bond prices move in opposite directions (as will be explained in Chapters 10 and 11). Therefore, rising interest rates are unfavourable for bonds already held in an investor's portfolio. Of course, high interest rates enhance the attractiveness of new bonds because these bonds must offer high returns to attract investors.

NOTE Ethics boxes (see page 15) which appear in many chapters, focus on the ethical dimensions of particular situations and issues in the investments world. Each box includes a Critical Thinking Question for discussion.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

ETHICS IN INVESTING

The Collapse of Storm Financial

For some Australian retirees, their dealings with Storm Financial have been an absolute disaster. Instead of having the comfortable retirement they had spent years saving for, the losses they incurred in the sharemarket have resulted in great challenges in meeting their living expenses, repaying debts, and, in some cases, keeping their homes. In many cases, the losses were due to an excessive use of margin loans to ratchet up share portfolio returns without any real understanding of the risks that they faced. Rather, they had entered into these aggressive investing strategies solely on the basis of trust in their Storm Financial advisor.

Storm Financial was a financial advisory company located in Townsville, Queensland, which went into receivership early in 2009. The Storm Financial business model encouraged many of their clients to take out loans against the equity in their homes in order to generate a lump sum to invest in the sharemarket. Clients were then advised to take out margin loans to increase the size of their investment portfolio. In essence, they became double-geared investors who were extremely exposed to sharemarket movements. As long as the market went up, their heavy leverage ensured big investment returns. The heavy use of debt to increase the size of their share portfolios also resulted in big fees and commissions for Storm Financial, as it generally charged a 7% fee for the advice given.

The collapse of the sharemarket in 2008 led to Storm Financial's clients taking heavy losses on their portfolios. In many cases, the clients were wiped out without even knowing that their share portfolios had been sold by their margin lenders to cover their outstanding loans, or even that they owed as much as they did against their share portfolios. (In some cases, the investors had simply signed blank loan documents and passed them over to their trusted Storm Financial advisor.) Now, many retirees are facing a return to the workforce at a time in their lives when it will not be easy for them to find work due to their age or ill health.

Critical Thinking Question What are the ethical issues of concern with Storm Financial's business model and the nature of advice that it gave to so many of its clients?

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

1.11 What should an investor first establish before developing and executing an investment program? Briefly describe each of the seven steps involved in investing.

1.12 What are four common investment goals?

1.13 Describe the differing investment philosophies typically applied during each of the following stages of an investor's life cycle.

a. Youth (ages 20–45)

b. Middle age (ages 45–60)

c. Retirement years (age 60 on)

1.14 Discuss the relation between share prices and the business cycle.

Meeting Liquidity Needs: Investing in Short-Term Vehicles

LG 5

As discussed earlier, you should ensure that you have adequate liquidity. This provision is a prerequisite to implementing long-term investment goals. *Liquidity* is the ability to convert an investment into cash quickly and with little or no loss in value. A cheque account is highly liquid. Shares and bonds are less liquid because there is no definite assurance that you will be able to sell them quickly without having to cut the price dramatically to attract a buyer.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Role of Short-Term Investments

Short-term investments represent an important part of most savings and investment programs. They generate income, which can be quite high during periods of high interest rates. However, their primary function is to provide a pool of reserves for emergencies or simply to accumulate funds for some specific purpose. As a rule of thumb, financial planners often suggest that you hold cash reserves equivalent to three to six months of your after-tax salary, and typically this type of emergency fund would be invested in safe, liquid, short-term investments.

Some individuals choose to hold short-term vehicles because they simply do not want to take the risk inherent in many types of long-term investments. In fact, this approach has considerable merit during periods of economic and investment instability. Regardless of your motives for holding short-term vehicles, you should evaluate them in terms of their risk and return, just as you would longer-term investments.

Interest on Short-Term Investments Short-term investments earn interest in one of two ways. Some investments, such as savings accounts, pay a *stated rate of interest*. In this case, you can easily find the interest rate—it's the stated rate on the account.

discount basis
a method of earning interest on a security by purchasing it at a price below the redemption value; the difference is the interest earned.

Alternatively, some short-term investments earn interest on a **discount basis**. This means that the security is purchased at a price below its redemption value (or face value), and the difference between what you pay to acquire the asset and what you receive when it matures is the interest the investment will earn. Australian Commonwealth Treasury notes, for example, are issued on a discount basis.

Risk Characteristics Short-term investments are generally considered to be low risk. Their primary risk results from *inflation risk*—the loss of potential purchasing power that occurs when the rate of return on these investments falls short of the inflation rate. This has often been the case with such vehicles as traditional bank savings accounts that generally pay a low rate of interest and have no minimum balance. Most other short-term investments have rates of return that are slightly higher than the inflation rate.

The *risk of default*—non-payment—is very low with short-term investments. The reason is that issuers of most short-term vehicles are highly reputable institutions, such as the Commonwealth Government, large banks and major corporations. Also, because the value of short-term investments does not change much in response to changing interest rates, exposure to capital loss is correspondingly low. Even so, during the global financial crisis (GFC) that began in 2007, depositors began to question the safety of banks and other financial institutions around the world. In an attempt to reassure depositors and to prevent a classic 'bank run' on Australian banks, the Commonwealth Government announced a government guarantee on deposits and wholesale funding for banks and other financial institutions that qualified as an 'authorised deposit-taking institution' (ADI). For individuals, the Commonwealth Government guarantee covers deposit balances up to $1 million per institution or bank.

Advantages and Disadvantages of Short-Term Investments As noted, the major advantages of short-term investments are their high liquidity and low risk. Most are available from local financial institutions and can be readily converted to cash with minimal inconvenience. Finally, because the returns on most short-term investments vary with inflation and market interest rates, investors can readily capture higher returns as rates move up. On the negative side, when interest rates go down, returns drop as well.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Although a decline in market rates has undesirable effects on most short-term vehicles, perhaps their biggest disadvantage is their relatively low return. Because these securities are generally so low in risk, you can expect the returns on short-term investments to average less than the returns on long-term investments.

Investment Suitability

Individual investors use short-term investments for both savings and investment. They use these assets to maintain a desired level of savings that will be readily available if the need arises—in essence, to provide *safety* and *security*. For this purpose, high yield is less important than safety, liquidity and convenience.

When investors use short-term vehicles for *investment purposes*, the yield that these instruments provide is often just as important as their liquidity. Most investors will hold at least a part of their portfolio in short-term, highly liquid securities, if for no other reason than to be able to act on unanticipated investment opportunities. Some investors, in fact, devote all or most of their portfolios to such securities.

Investors also use short-term securities as a temporary place to 'park' funds before deciding where to invest the money on a long-term basis. For example, if you have just sold some shares but do not have a suitable longer term investment alternative, you might place the proceeds in a money fund until you find a longer term use for them. Or if you feel that interest rates are about to rise sharply, you might sell your long-term bonds and use the proceeds to buy a certificate of deposit (CD) issued by a commercial bank.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

1.15 What makes an asset liquid? Why hold liquid assets? Would 100 CBA shares be considered a liquid investment? Explain.

1.16 Explain the characteristics of short-term investments with respect to purchasing power and default risk.

Careers in Finance

LG6

Regardless of the job title, a career in finance requires an understanding of the investment environment. The principles presented throughout this book will provide an initial foundation in investments essential to pursuing one of the many rewarding career paths within the field of finance. If you are well prepared and enthusiastic about a career in finance, you will find a wide variety of job opportunities available to you. The following overview provides a brief introduction to some careers in finance.

Commercial Banking Commercial banks provide banking services to individuals and businesses alike. More people work in commercial banking than in any other area of the financial services industry.

Due to the vast range of services provided by commercial banks, there exists a tremendous range of finance career opportunities within commercial banking, many of which require training in investments. Some of the finance-related areas found within commercial banks include mortgage lending, mortgage underwriting, corporate lending, asset management, leasing, consumer credit, trade credit and international finance. Some of the job titles common in the commercial banking sector include

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

personal banker, portfolio manager, short-term securities manager, financial analyst, credit analyst, home loan officer, corporate loan officer and mortgage underwriter.

Corporate Finance Within the corporate finance setting, you will find several rewarding job opportunities. Among other things, corporations require financial professionals to manage cash and short-term investments, raise and manage long-term financing resources, evaluate and undertake investment opportunities and interface with investors and the financial community. These critical finance functions exist within virtually every company regardless of size, public status or international presence.

The top finance job within a corporation is that of the chief financial officer (CFO). The CFO's primary responsibilities are to manage the company's capital resources and capital investments. Managing the company's capital resources includes managing its internal financing, such as cash and retained earnings, and interacting with the financial markets to acquire external financing, such as debt or equity. Investment principles are important to CFOs because so much of a CFO's job revolves around communication with investors. A CFO must understand how investors view the company and value the securities that the company has issued.

Corporate finance jobs are typically focused on a company's long-term goals aimed at increasing its value through successful investment decisions. More so than any other finance-related job, corporate finance jobs require a broad understanding of the various functional areas within the corporate setting (e.g. operations, marketing and accounting) and how these areas contribute to the corporate finance goals.

Financial Planning A financial planner consults clients on how to deal with their specific situations and meet their specific goals, both short-term and long-term. When consulting with individuals, a personal financial planner provides advice relating to education, retirement, investment, insurance, tax and estate planning—in most cases this means providing investment advice. Business owners will consult financial planners on issues such as cash flow management, investment planning, risk management and insurance planning, tax planning and business succession planning. The investment concepts discussed in this book represent the financial planner's primary tools.

An ability to clarify objectives, assess risks and develop strategic plans is essential for financial planners. For example, if a client is looking to retire in 20 years' time, what savings or investment strategies are best suited to meet that client's goals? Financial planners can work within a large financial services company such as AMP, within a small practice, or for themselves as a sole proprietorship. In all of these work environments, it is beneficial to obtain the Certified Financial Planner (CFP®) designation. To become a CFP®, you must pass an exam administered by the CFP® Board of Standards. The exam covers more than 175 topics in investing and financial planning. Obtaining this designation serves to demonstrate your proficiency as a financial planner and provides a comparative advantage relative to those who do not hold the CFP® designation.

Insurance The insurance business is a major industry in Australia that serves both individual and business client needs. There are two prominent finance jobs in insurance; one involves assisting individuals or businesses in managing risk, and the second involves asset management. Individuals and businesses invest in risk management in order to protect themselves from catastrophic losses or to guarantee certain outcomes. While insurers collect premiums and fees for the services they provide, their goal is to develop investment strategies intended to neutralise the risk assumed from their clients.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The insurance industry has vast sums under management and therefore requires highly trained investment specialists.

Investment Banking Investment banks assist companies and governments in issuing financial securities, such as shares and bonds, and they facilitate the purchase of securities by both institutional and retail investors. Their in-house security analysts provide research on both equity and fixed-income securities. Investment banks also make markets for financial securities (e.g. shares and bonds), and provide financial advice to and manage financial assets for high net-worth individuals, companies, institutions and governments. Investment banks even provide their clients with technical analysis or program trading and consultation on mergers and acquisitions.

Investment Management As the name implies, investment management is all about managing money for clients. The role of an investment manager includes elements of financial analysis, asset selection, security (e.g. share or bond) selection, and investment implementation and monitoring. Most investment management is done on behalf of a pool of investors whose investments comprise a fund. Some common examples of managed funds are superannuation funds, managed funds, exchange-traded funds and hedge funds.

Investment management comes in two basic flavours: passive or active. Investment managers engaged in *passive investment management* simply try to create a portfolio whose performance will mimic that of a major shares index like the ASX 200. Such a strategy tends to be very cost-effective because the fund does not expend resources trying to analyse shares to determine which will perform best in the future.

If you are an adrenaline junkie, then *active investment management* is likely to satisfy your craving. Although active investment management encompasses an unbounded set of possible investment strategies, all active investment management strategies share the same overarching goal of earning above-average returns. Some active investment managers take advantage of the latest and most sophisticated quantitative techniques, whereas others rely on well-established analytical methods in addition to the portfolio manager's instincts.

Each money manager has his or her own unique style. Many money managers buy and hold fixed-income securities including mortgaged-backed securities, corporate bonds and asset-backed securities. Others focus on equities, including small company shares, large caps and emerging market shares.

Investment management is a challenging and competitive career, so any additional preparation or edge that you can acquire will likely enhance your chances for success. The Chartered Financial Analyst (CFA) certification is one such advantage that you might consider obtaining. One of the most respected financial certifications, it is administered by the CFA Institute, which also administers the Certificate in Investment Performance Measurement (CIPM) program. Either the CFA or the CIPM designation will enhance your qualifications for a career in finance.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

1.17 Why is an understanding of investment principles important to a senior manager working in corporate finance?

1.18 Why do insurance companies need employees with advanced training in investments?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

NOTE The end-of-chapter summaries restate the chapter's Learning Goals and review the key points of information related to each goal.

LG 1 Understand the meaning of the term *investment* and the factors used to differentiate types of investments. An investment is any asset into which investors can place funds with the expectation of generating positive income and/or of preserving or increasing their value. The returns from investing are received either as income or as increased value.

Types of investments are securities or property; direct or indirect; debt, equity or derivative; low-risk or high-risk; short-term or long-term; and domestic or foreign.

LG 2 Describe the investment process and types of investors. Financial institutions and financial markets bring together suppliers and demanders of funds. The dominant Australian financial market is the securities market for shares, bonds and options. The participants in the investment process are government, business and individuals. Only individuals are net suppliers of funds. Investors can be either individual investors or institutional investors.

LG 3 Discuss the principal types of investments. Short-term investments have low risk. They are used to earn a return on temporarily idle funds, to serve as a primary vehicle for conservative investors and to provide liquidity. Ordinary shares offer dividends and capital gains. Fixed-income securities—bonds, convertible securities and preference shares—offer fixed periodic returns with some potential for gain in value. Managed funds allow investors to buy or sell interests in a professionally managed, diversified group of securities. Hedge funds are similar to managed funds except that they are open only to relatively wealthy investors, they tend to make riskier investments and they are subject to less regulation compared to managed funds.

Derivative securities such as options and futures are high-risk vehicles. Options offer an opportunity to buy or sell another security at a specified price over a given period of time. Futures are contracts between a seller and a buyer for delivery of a specified commodity or financial instrument, at a specified future date, at an agreed-on price. Other popular investment vehicles include tax-advantaged investments, real estate and tangibles.

Key Terms

NOTE A list of Key Terms gathers in one place the new vocabulary presented in each chapter.

debt, *p. 4*
derivative securities, *p. 4*
direct investment, *p. 3*
domestic investments, *p. 5*
equity, *p. 4*
financial institutions, *p. 5*
financial markets, *p. 5*
foreign investments, *p. 5*
indirect investment, *p. 4*
individual investors, *p. 6*
institutional investors, *p. 7*
investment, *p. 3*
long-term investments, *p. 5*
property, *p. 3*
returns, *p. 3*
risk, *p. 5*
securities, *p. 3*
short-term investments, *p. 5*
speculation, *p. 5*

bonds, *p. 9*
capital gains, *p. 8*
convertible security, *p. 9*
dividends, *p. 8*
fixed-income securities, *p. 9*
futures, *p. 10*
hedge funds, *p. 10*
liquidity, *p. 8*
managed fund, *p. 9*
money market managed funds (money finds), *p. 10*
options, *p. 10*
ordinary shares, *p. 8*
preference shares, *p. 9*
real estate, *p. 11*
tangibles, *p. 11*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 4 Describe the steps in investing, review fundamental tax considerations, and discuss investing over the life cycle. Investing should be driven by well-developed plans established to achieve specific goals. It involves a set of steps: meeting investment prerequisites, establishing investment goals, adopting an investment plan, evaluating investment vehicles, selecting suitable investments, constructing a diversified portfolio and managing the portfolio. Investors must also consider the tax consequences associated with various investment vehicles and strategies. The investment vehicles selected are affected by the investor's stage in the life cycle and by economic cycles. Younger investors tend to prefer growth-oriented investments that stress capital gains. As they age, investors move to higher quality securities. As they approach retirement, they become even more conservative. Some investments, such as shares, behave as leading indicators of the state of the economy.	diversification, *p. 12* investment goals, *p. 11* investment plan, *p. 12* portfolio, *p. 12* tax planning, *p. 13*
LG 5 Describe the most common types of short-term investments. Liquidity needs can be met by investing in various short-term investments, which can earn interest at a stated rate or on a discount basis. They typically have low risk. Banks, the government and brokerage companies offer numerous short-term vehicles. Their suitability depends on the investor's attitude towards availability, safety, liquidity and rate of return.	discount basis, *p. 16*
LG 6 Describe some of the main careers open to people with financial expertise and the role that investments play in each. Exciting and rewarding career opportunities in finance are available in many different fields such as commercial banking, corporate finance, financial planning, insurance, investment banking and money management.	

NOTE The Discussion Questions at the end of the chapter ask you to analyse and synthesise information presented in the chapter. These questions, like all other end-of-chapter assignment materials, are keyed to the chapter's Learning Goals.

Discussion Questions

LG 4

Q1.1 Assume that you are 35 years old, are married with two young children, are renting a unit and have an annual income of $90 000. Use the following questions to guide your preparation of a rough investment plan consistent with these facts.

a. What are your key investment goals?

b. How might personal taxes affect your investment plans? Use current tax rates to assess their impact.

c. How might your stage in the life cycle affect the types of risk you might take?

LG 5

Q1.2 What role, if any, will short-term vehicles play in your portfolio? Why?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Problems

All problems are available on www.pearson.com.au/myfinancelab

NOTE The Problems at the end of the chapter offer opportunities to perform calculations using the tools and techniques learned in the chapter.

LG 4

P1.1 Sonia Gomez, a 45-year-old woman, wishes to accumulate $250 000 over the next 15 years to supplement her superannuation savings. She expects to earn an average annual return of about 8% by investing in a low-risk portfolio containing about 20% short-term securities, 30% ordinary shares and 50% bonds.

Sonia currently has $31 500 that, at an 8% annual rate of return, will grow to about $100 000 at the end of 15 years (found using time-value techniques that will be described in the Appendix to Chapter 4). Her financial adviser indicated that for every $1000 Sonia wishes to accumulate at the end of 15 years, she will have to make an annual investment of $36.83. (This amount is also calculated on the basis of an 8% annual rate of return using the time-value techniques that are described in the Appendix to Chapter 4.) Sonia plans to accumulate needed funds by making equal, annual, end-of-year investments over the next 15 years.

a. How much money does Sonia need to accumulate by making equal, annual, end-of-year investments to reach her goal of $250 000?

b. How much must Sonia deposit annually to accumulate at the end of year 15 the sum calculated in part **a**?

Visit www.pearson.com.au/myfinancelab for web exercises, spreadsheets and other online resources.

Case Problem 1.1 INVESTMENTS OR GOLF?

NOTE Two Case Problems appear at the end of each chapter. They ask you to apply what you have learned in the chapter to a hypothetical investment situation.

LG 1 LG 2 LG 3

Justin Read and Judi Todd, senior accounting students at a large university, have been good friends since high school. Each has already found a job that will begin after they graduate. Justin has accepted a position as an internal auditor in a medium-size manufacturing company. Judi will be working for one of the major public accounting companies. Each is looking forward to the challenge of a new career and to the prospect of achieving success both professionally and financially.

Justin and Judi are preparing to enrol for their final semester. Each has one free elective to select. Justin is considering taking a golf course offered by the physical education department, which he says will help him socialise in his business career. Judi is planning to take a basic investments course. She has been trying to convince Justin to take investments instead of golf. Justin believes he doesn't need to take investments because he already knows what ordinary shares are. He believes that whenever he has accumulated excess funds, he can invest in the shares of a company that is doing well. Judi argues that there is much more to it than simply choosing ordinary shares. She feels that exposure to the field of investments would be more beneficial than learning how to play golf.

QUESTIONS

1. Explain to Justin the structure of the investment process and the economic importance of investing.
2. List and discuss the other types of investment vehicles with which Justin is apparently unfamiliar.
3. Assuming that Justin already gets plenty of exercise, what arguments would you give to convince him to take investments rather than golf?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 1.2 PREPARING CAROLYN BOWEN'S INVESTMENT PLAN

LG4 LG5 Carolyn Bowen, who just turned 55, is employed as an administrative assistant for Xcon Ltd, where she has worked for the past 20 years. She is in good health, lives alone and has two grown children. A few months ago, her husband died. Carolyn's husband left her with only their home and the proceeds from a $75 000 life insurance policy. After she paid medical and funeral expenses, $60 000 of the life insurance proceeds remained. In addition to the life insurance proceeds, Carolyn has $37 500 in a savings account, which she has accumulated over the past 10 years. Recognising that she is within 10 years of retirement, Carolyn wishes to use her limited resources to develop an investment program that will allow her to live comfortably once she retires.

Carolyn is quite superstitious. After consulting with a number of psychics and studying her family tree, she feels certain she will not live past 80. She plans to retire at either 62 or 65, whichever will better allow her to meet her long-run financial goals. After talking with a number of knowledgeable individuals—including, of course, the psychics—Carolyn estimates that to live comfortably, she will need $45 000 per year before taxes once she retires. This amount will be required annually for each of 18 years if she retires at 62 or for each of 15 years if she retires at 65. As part of her financial plans, Carolyn intends to sell her home at retirement and rent an apartment. She has estimated that she will net $112 500 if she sells the house at 62 and $127 500 if she sells it at 65. Carolyn has no financial dependants and is not concerned about leaving a sizeable estate to her heirs.

If Carolyn retires at age 62, she will receive from her superannuation plan a total of $1359 per month ($16 308 annually); if she waits until age 65 to retire, her total retirement income will be $1688 per month ($20 256 annually). For convenience, Carolyn has already decided that to convert all her assets at the time of retirement into a stream of annual income, she will at that time purchase an annuity by paying a single premium. The annuity will have a life just equal to the number of years remaining until her 80th birthday. If Carolyn retires at age 62 and buys an annuity at that time, for each $1000 that she puts into the annuity she will receive an annual benefit equal to $79 for the subsequent 18 years. If she waits until age 65 to retire, each $1000 invested in the annuity will produce an annual benefit of $89.94 for the next 15 years.

Carolyn plans to place any funds currently available into a savings account paying 6% compounded annually until retirement. She does not expect to be able to save or invest any additional funds between now and retirement. For every dollar that Carolyn invests today, she will have $1.50 by age 62, or if she leaves the money invested until age 65, she will have $1.79 for each dollar invested today.

QUESTIONS

1. Assume that Carolyn places currently available funds in the savings account. Determine the amount of money Carolyn will have available at retirement once she sells her house if she retires at (a) age 62 and (b) age 65.
2. Using the results from question 1, determine the level of annual income that will be provided to Carolyn through the purchase of an annuity at (a) age 62 and (b) age 65.
3. With the results found in questions 1 and 2, determine the total annual retirement income Carolyn will have if she retires at (a) age 62 and (b) age 65.
4. From your findings, do you think Carolyn will be able to achieve her long-run financial goal by retiring at (a) age 62 or (b) age 65? Explain.
5. Evaluate Carolyn's investment plan in terms of her use of a savings account and an annuity rather than some other investment vehicles. Comment on the risk and return characteristics of her plan. What recommendations might you offer Carolyn? Be specific.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Excel with Spreadsheets

NOTE Excel spreadsheet exercises at the end of each chapter will assist you in learning some useful applications of this tool in the personal investing process.

In the following chapters of this text, you will be asked to solve spreadsheet problems using Microsoft Excel®. While each person's skill and experience with Excel will vary, we assume that you understand its basics. This includes entering text and numbers, copying or moving a cell, moving and copying using 'drag and drop', inserting and deleting rows and columns, and checking your spelling. The review in this chapter focuses on entering and editing data in the worksheet.

To complete the spreadsheet review, go to www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885 and to 'Student Resources'. Click on 'Spreadsheet Review'. There you will be asked to **create a spreadsheet** and perform the following tasks.

Questions

1. Add and subtract data with a formula.
2. Multiply and divide data with a formula.
3. Total cells using the sum function and calculate an average.
4. Use the average function.
5. Copy a formula using the 'drag and drop' method.

NOTE The Website Information section directs you to financial and investment resources on the Internet.

Investing is a topic of potential interest to just about every adult. The widespread necessity and popularity of investing means that many people want to share and/or seek information related to the specific investment topic in which they are interested. The World Wide Web is tailor-made for this sharing of information. In each of the chapters in this book we provide information about websites that offer information related to the chapter topic. For example, the following websites are general information sources that can be used to learn more about investing.

WEBSITE	URL
Australian Securities Exchange	www.asx.com.au
Bloomberg	www.bloomberg.com.au
Smart Investor	www.afrsmartinvestor.com.au
Sydney Morning Herald	www.smh.com.au/business
Zurich Financial Services	www.zurich.com.au

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER

2

Markets and Transactions

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Identify the basic types of securities markets and describe the IPO process.
- LG2 Explain the characteristics of organised securities exchanges.
- LG3 Understand the over-the-counter markets and the general conditions of securities markets.
- LG4 Review the importance of global securities markets, their performance, and the investment procedures and risks associated with foreign investments.
- LG5 Discuss the regulation of securities markets.
- LG6 Explain long purchases and the motives, procedures and calculations involved in making margin transactions and short sales.

The Changing Face of the Market

The venerable Australian Securities Exchange (ASX) is in merger talks with the Singaporean Stock Exchange, possibly resulting in a new mega exchange positioned to meet the increasing demands of the fast-growing Asia-Pacific region. At the same time, the ASX is bracing for the onslaught of heavy competition from Chi-X Australia—a wholly owned subsidiary of Chi-X Global, which is controlled by Japanese investment bank, Nomura—as the alternative trading platform provider offers lightning fast and cheaper securities trading services to the Australian marketplace.

Welcome to the changing world of securities markets, where national boundaries are losing importance. Thanks to advances in telecommunications, networks of electronic screens replace the traditional stock exchange trading floor. Some industry observers envision the creation of a centralised 'World Stock Exchange', an electronic marketplace that follows the sun, trading in issues listed on any recognised stock exchange. Others predict that three or four world markets will emerge. Opponents of such immense multinational exchanges call them unnecessary. Investors can already buy in London and sell in Hong Kong through online or traditional brokers. They worry that fewer securities markets will reduce competition. They also cite the very different national regulations as a major stumbling block to successful market consolidation.

In this chapter, we will study the markets, the exchanges, the regulations and the transactions that enable companies to raise money in the capital markets and enable institutions and individuals to invest in these companies.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Securities Markets

LG1 LG2 LG3

securities markets
forums that allow suppliers and demanders of securities to make financial transactions; they include both the money market and the capital market.

Securities markets are forums that allow suppliers and demanders of *securities* to make financial transactions. They permit such transactions to be made quickly and at a fair price. In this section we will look at the various types of markets, their organisation, their regulation and their general behaviour.

Types of Securities Markets

money market
the market in which short-term securities are bought and sold.

capital market
the market in which long-term securities such as shares and bonds are bought and sold.

Securities markets may be classified as either money markets or capital markets. In the **money market,** short-term securities such as bank-accepted bills and certificates of deposit are bought and sold. In the **capital market,** transactions are made in longer term securities such as shares and bonds. In this book we will devote most of our attention to the capital market, through which investments can be made in shares, bonds, options, futures and managed funds. Capital markets can be classified as either primary or secondary, depending on whether securities are initially being sold by their issuing company or by intervening owners.

The Primary Market

primary market
the market in which new issues of securities are sold to the public.

initial public offering (IPO)
the first public sale of a company's shares.

Australian Securities & Investments Commission (ASIC)
the Commonwealth agency that regulates securities offerings and markets.

public offering
the sale of a company's securities to the general public.

rights offering
an offer of shares to existing shareholders on a pro rata basis.

private placement
the sale of new securities directly to selected groups of investors.

underwriting
the role of the financial adviser in bearing the risk of purchasing any unsold securities at an agreed price and attempting to resell them to the public.

underwriting syndicate
a group formed by an underwriter to spread the financial risk associated with underwriting new securities.

The market in which new issues (or 'floats') of securities are sold to the public is the primary market. In the **primary market**, the issuer of the equity or debt securities receives the proceeds of sales. For the year ended 30 June 2010, $4 billion was raised by 67 public company floats in the Australian primary equity market. The main vehicle in the primary market is the **initial public offering (IPO)**—the first public sale of a company's shares. The primary markets also sell new securities, called seasoned new issues, for companies that are already public.

Before securities can be offered for public sale, the issuer must lodge a prospectus (public offer document) with, and obtain approval from, the **Australian Securities & Investments Commission (ASIC)**. This Commonwealth Government agency must confirm both the adequacy and the accuracy of the information provided to potential investors before a security is publicly offered for sale. ASIC also regulates the securities markets. Companies that are to be publicly listed must also meet the requirements of the Australian Securities Exchange (ASX).

To market its securities in the primary market, a company has three choices: (1) a **public offering**, in which the company offers its securities for sale to the general public; (2) a **rights offering**, in which the company offers shares to existing shareholders on a pro rata basis; or (3) a **private placement**, in which the company sells new securities directly to selected groups of investors, such as insurance companies and superannuation funds. In this case, the disclosure requirements are reduced and an information memorandum is required in lieu of a full prospectus.

Most companies that go public are small, fast-growing businesses that require additional capital to continue expanding. In addition, large companies may decide to spin off a unit into a separate public company. To facilitate a successful IPO, they are usually made with the assistance of a merchant banker and/or a stockbroker who acts as financial adviser(s) in selling new security issues. The main activity of the adviser in this instance is **underwriting**. This process involves purchasing the unsold securities, if any, from the issuing company at an agreed price and bearing the risk of reselling them to the public at a profit. The underwriter also provides the issuer with advice about pricing and other important aspects of the issue.

In the case of very large security issues, the underwriter brings in other financial institutions as partners to form an **underwriting syndicate**, and thus spread the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

financial risk associated with the issue. The selling process for a large security issue is depicted in Figure 2.1.

Compensation for underwriting and selling services typically comes in the form of a fee charged by the financial adviser for providing this form of 'insurance' to ensure that the entire issue is taken up. In some cases, the underwriter may take up the entire issue at a discount and earn its compensation by selling the securities to the public at a higher price (this method is more common in the United States than in Australia).

INVESTOR FACTS

FIND OUT ABOUT UPCOMING FLOATS ON THE WEB— Investment opportunities can often bypass us simply because we didn't know about them. Now you can find out about upcoming company share floats at the ASX website: <www.asx.com.au/research/companies/floats/upcoming.htm>.

Secondary Markets The market in which securities are traded *after they have been issued* is the **secondary market**, or the *aftermarket*. The secondary market provides a way for owners of securities that are already issued to sell them to others. In the secondary market, unlike the primary market, the transaction does not involve the company that issued the securities. Instead, money and securities are exchanged between investors; the seller exchanges securities for cash paid by the buyer. The secondary market gives security purchasers liquidity. It also provides a mechanism for continuous pricing of securities to reflect their value at any point in time, on the basis of the best information then available.

secondary market the market in which securities are traded after they have been issued.

organised securities exchanges centralised institutions in which transactions are made in securities already outstanding.

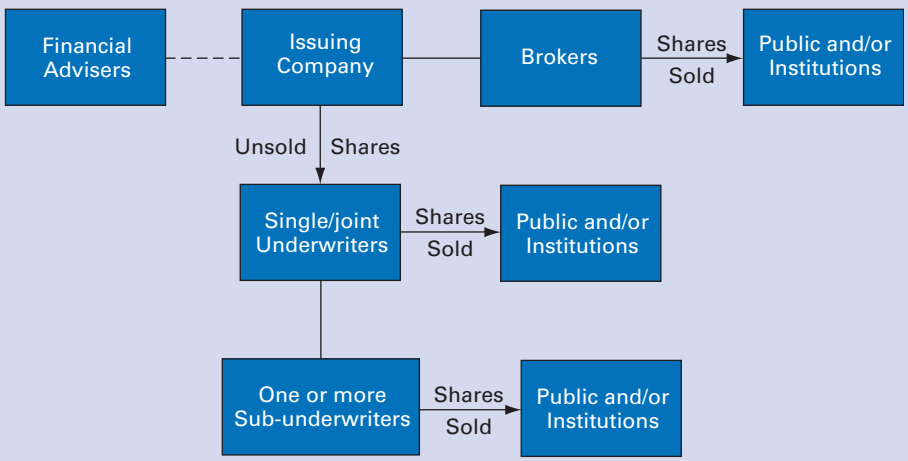
over-the-counter (OTC) market a widely scattered telecommunications network through which transactions are made in both initial public offerings (IPOs) and securities already outstanding.

Included among secondary markets are the various organised securities exchanges and the over-the-counter markets. **Organised securities exchanges** are centralised institutions in which the forces of supply and demand for securities already outstanding are brought together. These exchanges are auction markets in which price is determined by the flow of buy and sell orders. The **over-the-counter (OTC) market**, on the other hand, is a widely scattered telecommunications network through which transactions are made in both *initial public offerings* and securities that are already outstanding. The OTC market uses a quote system in which negotiation and dealer quotes determine the price. Some popular investment vehicles may be traded both on the organised exchanges and in the OTC market.

FIGURE 2.1

The Selling Process for a Large Security Issue

The financial advisers to the issuing company may form an underwriting syndicate (possibly with sub-underwriters). The underwriting syndicate buys any unsold securities from the issuing corporation at an agreed price. The underwriter(s) then has the opportunity (and bears the risk) of reselling the issue to the public and/or institutional investors.



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

HIGHLY FAVOURABLE CONDITIONS FOR RAISING CAPITAL!—The Australian equity market has experienced outstanding growth in recent years, with annual turnover increasing fivefold to over $1 trillion and market capitalisation doubling to $1.5 trillion in the 10 years to December 2009. In the same period, average market liquidity more than doubled.

Organised Securities Exchanges

Most trading in securities takes place on organised exchanges. Each exchange conducts business at a physical location, but can be linked with other locations by means of telecommunications. For example, the Australian Securities Exchange conducts business simultaneously in each state capital city. In addition, foreign exchanges list and trade securities relevant to their own markets. Here we will consider the basic structure, rules and operations of each of these organised domestic securities exchanges. (Foreign exchanges are discussed later.)

The Australian Securities Exchange Stockbroking began in Australia in 1829 when Matthew Gregson advertised his broking services, having been granted permission to trade in the shares of the Bank of New South Wales. Interest in stockbroking grew during the gold rush of the 1850s and a number of equity markets existed in cities and regional centres, including Ballarat, Bendigo, Cairns, Rockhampton and Newcastle. The regional exchanges, however, were not long-lasting. The first formal exchange, the Sydney Stock Exchange, was established in 1871. Exchanges in the other five state capital cities came into being between 1882 and 1889, but each exchange operated independently. In 1937 the Australian Associated Stock Exchanges (AASE) was created to act as a national coordinating body. It was responsible for developing and implementing common rules in order to achieve national uniformity. The move towards full unification of the disparate exchanges began in 1977 when the Sydney and Melbourne exchanges implemented a joint trading floor allowing access to members of either exchange.

The expensive human and computer capital required to run an exchange, along with the rapid internationalisation of the market during the 1980s, made it necessary for the exchanges to combine their resources and present a common face to the world. The Australian Stock Exchange (ASX) began operation on 1 April 1987 following an agreement between the six independent exchanges to merge into a single national body. The ASX was incorporated under legislation of the Australian Parliament, entitled the *Australian Stock Exchange and National Guarantee Fund Act*, with a board of directors elected by the members and a requirement to ensure representation by each state. Based on domestic capitalisation at September 2010, the ASX Group is the fourth largest sharemarket in the Asia-Pacific region and the twelfth largest in the world.

Most organised securities exchanges are modelled on the New York Stock Exchange (NYSE), which is the dominant exchange in the world. The NYSE is a mutual (or member) organisation which requires that stockbrokers who wish to trade through the exchange buy a 'seat' (or part ownership) on the exchange. This was also the ownership form of the ASX (and its predecessors) up until 13 October 1998, when it converted from a mutual organisation to a shareholder company. The ownership rights of the stockbroker members were then reflected in their shares in ASX Limited. The ASX subsequently listed its own shares on the exchange.

As a mutual organisation, the ASX was organised and structured with the prime goal of serving its members (the stockbrokers). The change of status of the ASX has made it more commercially focused and profit-oriented for the benefit of its shareholders. It operates principally on a 'user-pays' basis, earning most of its revenue from company listing fees, the sale of market information and transaction fees. The demutualisation and listing now makes it possible for non-stockbrokers to share in the ownership of the exchange and to become directors of the ASX Group.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Trading Activity Trading on the ASX is carried out by stockbrokers or stockbroking companies (known officially as *participating organisations*). Selling and buying shares are just two sides to the same transaction. On one side are the seller and the seller's stockbroker, on the other the buyer and the buyer's stockbroker. Regardless of where they are located, through the use of technology all stockbrokers have the same access to the ASX trading system and the settlement and transfer system (the Clearing House Electronic Sub-register System, or CHESS).

Shares are typically bought and sold using the services of stockbroking companies. For your first order to buy shares, stockbroking companies will normally require you to provide the necessary funds before processing your request. Once your account has been established, you can normally place orders to buy and sell shares over the telephone or on the Internet. After you buy or sell shares, your stockbroker will send you a *contract note* that contains the details of the transaction, including share price, brokerage fees, government charges and the net amount. Settlement is required to take place within three business days following the transaction, whether a contract note has been received or not (a system known as T+3). All ASX shareholding records are maintained electronically on the CHESS system, share certificates having been phased out. *A holding statement* will be provided by CHESS whenever your share ownership changes.

Listing Policies To have its shares listed on the exchange for public trading, a company must be large enough for there to be a market in its shares, and it must agree to abide by the ASX Listing Rules. The Listing Rules have been established to protect the interests of the listed entities, while maintaining investor protection and the good reputation of the market. The Listing Rules set out numerous requirements to be met for original listing and for continued listing on the exchange. Failure to maintain compliance renders the company's securities liable to suspension or removal. The rules also set out the responsibility of the company, in a timely manner, to publicly disclose information which may affect security values or influence investment decisions. This 'continuous disclosure' of relevant information ensures that the market is kept fully informed and reduces the likelihood of insider trading (discussed later in this chapter).

Interest Rate Market The interest rate market has been established by the ASX to provide investors with easy access to a market where they can trade in bonds in the same way as they can buy and sell shares. Previously, corporate bonds (or debentures) could often be bought only directly from the issuing companies. Secondary trading in such bonds was limited, but the trading that did occur took place through an informal market between stockbrokers. Interest rate investments are attractive for certain investors because they provide a steady and reliable income stream without the potential fluctuations inherent in share dividends.

Options Exchange *Options* allow their holders to sell or to buy another security or property at a specified price on (or possibly before) a given date. ASX options are traded on the same system used to trade shares. Options are traded on a price and time priority basis. Market makers are required to provide quotes to make it easier to trade into and out of option positions. Options exchanges deal only in security and related options; options to sell or buy property are not traded in this marketplace, but rather result from private transactions made directly between sellers and buyers. Options are discussed in Chapter 14.

Futures Exchange *Futures* are contracts that guarantee the delivery of a specified commodity or financial instrument at a specific future date at an agreed price. ASX

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

RAISING EQUITY—In the 2009/10 fiscal year, total equity capital raised (including new floats) on the ASX was over $81 billion. At 30 June 2010, total market capitalisation of equities listed on the ASX was a staggering $1.3 trillion!

operates an increasingly diversified range of futures and options markets, including markets for equities and interest rates as well as agricultural, energy and environmental markets that are rapidly evolving in response to market needs. Futures are discussed in Chapter 15.

The Over-the-Counter Market The *over-the-counter market* is not a specific institution; rather, it is another way of trading securities. It is an 'informal market' of traders. The OTC market is the result of an intangible relationship among sellers and purchasers of securities, who are linked by a telecommunications network. The prices at which securities are traded in the OTC market are determined by using a quote system that involves negotiation and dealer quotes. The actual process, which is described later, depends on the general activity of the security. Most government and corporate bonds are traded over the counter. Securities traded in this market are sometimes called *unlisted securities*.

New Issues and Secondary Distributions To create a continuous market for unlisted securities, the OTC market also provides a forum in which initial public offerings, both listed and unlisted, are sold. If they are listed, subsequent transactions are made on the appropriate organised securities exchange; unlisted securities continue to trade in the OTC market. **Secondary distributions**—the public sales of large blocks of previously issued securities held by large investors—are also made in the OTC market to minimise the potentially negative effects of such transactions on the price of listed securities.

secondary distributions
the public sales of large blocks of previously issued securities held by large investors.

The Role of Dealers The market price of OTC securities results from a matching of supply and demand for securities by traders known as **dealers**. Each dealer 'makes markets' in certain securities by offering to buy or sell them at stated prices. Thus, unlike the organised exchanges (where the buyer and seller of a security are brought together by a broker), the OTC market links a buyer or seller with a dealer. That is, the second party to an OTC transaction is always a dealer. For example, a dealer making a market in a security might offer to buy shares from investors at $29.50 and sell shares to other investors at $30.90. The **bid price** is the highest price offered by the dealer to purchase a given security; the **ask price** is the lowest price at which the dealer is willing to sell a given security. Because more than one dealer frequently makes a market in a given security, dealers compete. Buyers and sellers attempt to find and negotiate the best price—lowest buy price or highest sell price—when making OTC market transactions. The dealer makes a profit from the spread between the bid price and the ask price.

dealers
traders who 'make markets' by offering to buy or sell certain over-the-counter securities at stated prices.

bid price
the highest price offered by a dealer to purchase a given security.

ask price
the lowest price at which a dealer is willing to sell a given security.

Nasdaq The largest dealer market in the United States is made up of a large list of securities that are listed and traded on the **Nasdaq**. Founded in 1971, Nasdaq had its origins in the OTC market but is today considered *a totally separate entity that is no longer a part of the OTC market*. In fact, in 2006 the Nasdaq was formally recognised by the US Securities and Exchange Commission (SEC) as a 'listed exchange', giving it pretty much the same stature and prestige as the NYSE.

To be traded on the Nasdaq, all securities must have at least two market makers, although the bigger, more actively traded shares, like Cisco Systems, will have many more than that. These dealers electronically post all their bid/ask prices so that when investors place market orders, they are immediately filled at the best available price.

The Nasdaq listing standards vary depending on the Nasdaq listing market. The 1000 or so securities traded on the *Nasdaq Global Select Market* meet the world's highest listing standards. Created in 2006, the Global Select Market is reserved for the

Nasdaq
an automated system that provides up-to-date bid and ask prices on certain selected, highly active OTC securities.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

biggest and the 'bluest'—highest quality—of the Nasdaq shares. The listing requirements are also fairly comprehensive for the roughly 1000 securities traded on the *Nasdaq Global Market*. Shares included on these two markets are all widely quoted and actively traded. The trades, all executed electronically, are every bit as efficient as they are on the floor of the NYSE. Indeed, the big-name shares—such as Microsoft, Intel, Cisco Systems, Dell, eBay, Google, Yahoo!7, Apple, Starbucks and Staples—traded on the Nasdaq receive as much national visibility and are as liquid as those traded on the NYSE. In total, 50 countries are represented by the more than 3800 companies listed on Nasdaq as of 2009.

General Market Conditions: Bull or Bear

Conditions in the securities markets are commonly classified as 'bull' or 'bear', depending on whether securities prices are rising or falling over time. Changing market conditions generally stem from changes in investor attitudes, changes in economic activity, and government actions aimed at stimulating or slowing down economic activity. **Bull markets** are favourable markets normally associated with rising prices, investor optimism, economic recovery and government stimulus. **Bear markets** are unfavourable markets normally associated with falling prices, investor pessimism, economic slowdown and government restraint. The beginning of 2003 marked the start of a generally bullish market cycle that peaked before turning sharply bearish in October 2007. Although far from having fully recovered, the bearish market appears to have bottomed out in March 2009 and has since been trying to establish a bullish momentum.

bull markets
favourable markets normally associated with rising prices, investor optimism, economic recovery and government stimulus.

bear markets
unfavourable markets normally associated with falling prices, investor pessimism, economic slowdown and government restraint.

In general, investors experience higher (or positive) returns on share investments during a bull market. However, some securities are bullish in a bear market or bearish in a bull market. Of course, during bear markets many investors invest in vehicles other than securities to obtain higher and less risky returns. Market conditions are difficult to predict and usually can be identified only after they already exist. Sources of information that can be used to assess market conditions are described in Chapter 3 and applied to the analysis and valuation of ordinary shares in Chapters 7 and 8.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

2.1 Differentiate between each of the following pairs of words:

a. *Money market* and *capital market*
b. *Primary market* and *secondary market*
c. *Organised securities exchanges* and *over-the-counter (OTC) market*

2.2 Briefly describe the role of a financial adviser in underwriting a public offering. Differentiate among the terms *public offering*, *rights offering* and *private placement*.

2.3 Explain the process for buying or selling shares on the ASX. Apart from providing a market for trading in shares, what are some of the other markets served by the ASX?

2.4 Explain how the *over-the-counter market* works. Be sure to mention dealers, and bid and ask prices. What role does this market play in initial public offerings (IPOs) and secondary distributions?

2.5 Differentiate between a *bull market* and a *bear market*.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Globalisation of Securities Markets

diversification
the inclusion of a number of different investment vehicles in a portfolio to increase returns or reduce risk.

Today investors, issuers of securities and securities companies look beyond the markets of their home countries to find the best returns, lowest costs and best international business opportunities. The basic goal of most investors is to earn the highest return with the lowest risk. This outcome is achieved through **diversification**—the inclusion of a number of different investment vehicles in a portfolio to increase returns or reduce risk. The investor who includes foreign investments in a portfolio can greatly increase the potential for diversification by holding (1) a wider range of industries and securities, (2) securities traded in a larger number of markets, and (3) securities denominated in different currencies. The smaller and less diversified an investor's home market is, the greater the potential benefit from prudent international diversification. The Australian capital market makes up less than 2% of the world's investment opportunities. The other 98% or so are in 'foreign' markets!

Advances in technology and communications, together with the elimination of many political and regulatory barriers, allow investors to make cross-border securities transactions with relative ease. More and more financial markets are opening and becoming integrated with the rest of the world's markets. Both investors and seekers of funds can view the world's markets as available to them. In short, globalisation of the securities markets is enabling investors to seek out opportunities to profit from rapidly expanding economies throughout the world. Here, we consider the growing importance of international markets, ways to invest in foreign securities and the risks of investing internationally.

Growing Importance of International Markets

Organised securities exchanges now operate in more than 100 countries worldwide. They are located not only in the major industrialised nations such as the United States, Japan, the United Kingdom, Canada and Germany, but also in emerging economies such as Brazil, Chile, India, South Korea, Malaysia, Mexico, Taiwan and Thailand. The top four organised securities markets worldwide (based on dollar volume) are the Nasdaq, New York, London and Tokyo stock exchanges. Other important foreign exchanges include Shanghai, Paris, Osaka, Toronto, Montreal, Hong Kong, Zurich and Taiwan.

The economic integration of the European Union (EU), along with pressure from financial institutions that want an efficient process for trading shares across borders, is changing the European securities market environment. Instead of many small national exchanges, countries are banding together to create cross-border markets and compete more effectively in the pan-European equity-trading markets. The Paris, Amsterdam, Brussels and Lisbon exchanges, plus a derivatives exchange in London, merged to form Euronext, and the Scandinavian markets formed Norex. In mid-2006, Euronext and the NYSE decided to merge their businesses. Other exchanges, including the Australian Securities Exchange, are considering a 24-hour global market alliance, trading the shares of selected large international companies via an electronic order-matching system. Nasdaq, with joint ventures in Japan, Hong Kong, Canada and Australia, plans to expand into Latin America and the Middle East. These mergers and cooperative arrangements could be the first step towards a worldwide stock exchange.

Bond markets too have become global, and more investors than ever before regularly purchase government and corporate fixed-income securities in foreign markets. The United States dominates the international government bond market; it is followed by Japan, Germany and the United Kingdom.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

International Investment Performance

A primary motive for investing overseas is the lure of high returns. In fact, a number of foreign sharemarkets performed better than the Australian market during the period 2000–2010. Of course, foreign securities markets tend to be more risky than the Australian market. A market with high returns in one year may not do so well in the next year.

Investors can compare activity on Australian and foreign exchanges by following market indices that track the performance of those exchanges. For instance, the All Ordinaries Index is the most popular measure of the Australian market, and indices for more than 20 different sharemarkets are available. (We'll discuss indices in more detail in Chapter 3.) Most of the main indices, trading activity in selected shares on major foreign exchanges, and currency exchange rates are reported daily in the *Australian Financial Review* and regularly in other financial publications.

Ways to Invest in Foreign Securities

Foreign security investments can be made either indirectly or directly. One form of *indirect* investment is the purchase of shares of an Australian-based multinational with substantial foreign operations. Many Australian-based multinational companies, such as BHP Billiton, Brambles Industries, Pacific Dunlop and Boral, receive a substantial proportion of their revenues from overseas operations. By investing in the securities of such companies, an investor can achieve a degree of international diversification. Another form of indirect foreign investment can be achieved by purchasing shares in a managed fund that invests primarily in foreign securities. Both of these types of indirect foreign securities investment transactions are made in a conventional fashion through a stockbroker, as explained later in this chapter and in Chapter 12, which is devoted to managed funds.

Direct investment in foreign companies can be achieved in two ways: by purchasing securities on foreign exchanges, or by buying securities of foreign companies that are traded on the ASX. The first way—purchasing securities on foreign exchanges—involves additional risks because the securities are not traded in Australian dollars. This approach is not for the timid or inexperienced investor.

Because each country's exchange has its own regulations and procedures, investors must be prepared to cope not only with currency exchange (dollars to Thai baht, for example) but also with varying degrees of market regulation and efficiency and with different securities exchange rules, transaction procedures, accounting standards, tax laws and language barriers. These transactions are best handled either through major brokers with large international operations, or through major banks that have special units to handle foreign securities transactions. Brokers at these companies provide information and advice and make foreign securities transactions for their clients. Alternatively, investors can deal with foreign broker-dealers, but such an approach is more complicated and more risky.

Risks of Investing Internationally

Investing abroad is not without pitfalls. In addition to the usual risks involved in making any security transaction, you must consider the risks associated with doing business in a particular foreign country. Changes in trade policies, labour laws and taxation may affect operating conditions for the country's companies. The government itself may not be stable. Therefore, when making investments in foreign markets, you must watch similar environmental factors in each foreign country. That is, of course,

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

more difficult than at home because of your lack of familiarity with the foreign economic and political environments, as well as the number of countries involved.

Australian securities markets are generally viewed as highly regulated, efficient and reliable. This is not always the case in foreign markets, many of which lag substantially behind Australia in both operations and regulation. Some countries place various restrictions on foreign investment. In Korea and Taiwan, for example, managed funds are the only way for foreigners to invest. Mexico has a two-tier market, with some securities restricted to foreigners. Some countries make it difficult for foreigners to get their funds out, and many impose taxes on dividends. For example, Swiss taxes are about 20% on dividends paid to foreigners. In addition, accounting standards vary from country to country. These differences in accounting practices can affect the apparent profitability, conceal other attractive assets (for example, hidden reserves and undervalued assets that are permitted in many countries) and fail to disclose other risks. As a result, it is difficult to compare fairly the financial performances and positions of companies operating in different foreign countries. Other difficulties include illiquid markets and an inability to obtain reliable investment information because of a lack of reporting requirements.

Furthermore, international investing involves securities denominated in foreign currencies, so trading profits and losses are affected not only by a security's price changes but also by changes in currency exchange rates. The values of the world's major currencies fluctuate with respect to each other on a daily basis, and the relationship between two currencies at a specified date is called the **currency exchange rate**. On 1 October 2010, the currency exchange rate for the Korean won (KRW) and the Australian dollar (A$) was expressed as follows:

currency exchange rate
the relationship between two currencies at a specified date.

A$1 = KRW1095.43

KRW1 = A$0.0009128

On that day, you would have received 1095.43 Korean won for every A$1. Conversely, 1000 Korean won was worth A$0.91.

Changes in the value of a particular foreign currency with respect to the Australian dollar—or any other currency—are called *appreciation* and *depreciation*. For example, on 1 October 2009, the KRW/A$ exchange rate was 1035.96. In 12 months, the Korean won had *depreciated* relative to the dollar (and the dollar *appreciated* relative to the won). On 1 October 2010, it took more won to buy A$1 (1095.43 versus 1035.96), so 1000 won was worth less in dollar terms (A$0.9128 versus A$0.9653). Had the Korean won instead *appreciated* (and the Australian dollar *depreciated* relative to the Korean won), each won would have been worth more in dollar terms.

currency exchange risk
the risk caused by the varying exchange rates between the currencies of two countries.

Currency exchange risk is the risk caused by the varying exchange rates between the currencies of two countries. For example, assume that on 1 October 2009, you bought 1000 units in a Korean managed fund at 1000 Korean won per share, held them for 12 months, and then sold them for their original purchase price of 1000 Korean won. The following table summarises these transactions:

Date	Transaction	Number of Units	Price in KRW	Value of Transaction in KRW	Exchange Rate KRW/AUD	Value in AUD
1/10/09	Purchase	1000	10 000	10 000 000	1035.96	$9652.88
1/10/10	Sell	1000	10 000	10 000 000	1095.43	$9128.83

Although you realised the original purchase price in Korean won, in dollar terms the transaction resulted in a loss of A$524.05 ($9652.88 – $9128.83). The value of the shares in dollars decreased because the Korean won was worth less—had

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

depreciated—relative to the Australian dollar. Therefore, investors in foreign securities must be aware that the value of the foreign currency in relation to the dollar can have a profound effect on returns from foreign security transactions.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

2.6 Why is globalisation of securities markets an important issue today? How have international investments performed in recent years?

2.7 Describe how foreign security investments can be made, both indirectly and directly. Describe the risks of investing internationally, particularly *currency exchange risk*.

Trading Hours and Regulation of Securities Markets

Trading Hours of Securities Markets

The ASX's on-market trading hours are 10 am to 4 pm AEST. The New York Stock Exchange and Nasdaq recently expanded their trading hours beyond the traditional session (9.30 am to 4 pm eastern US time) to compete more effectively with foreign securities markets, in which investors can execute trades when the US markets are closed. Other international markets are expected eventually to expand their hours as well.

These actions represent the first steps towards the development of 24-hour global trading of securities through organised exchanges. Actually, large institutional investors are already able to trade securities after hours through *Instinet*, a private electronic trading system owned by Reuters, the British communications conglomerate. Many experts expect longer trading sessions to be used primarily by institutional investors but question their value for the average individual investor.

Regulation of Securities Markets

Securities laws are passed to protect investors and to meet the needs of the financial marketplace as it grows in both size and complexity. A number of laws require that adequate and accurate disclosure of information be made to investors. Such laws also regulate the activities of participants in the securities markets. The securities market in Australia is regulated by the *Corporations Act 2001*, which is administered by the Australian Securities and Investments Commission (ASIC). A sharemarket can be established only with the approval of the relevant Commonwealth Government minister (unless it is declared to be exempt). The minister must be satisfied with the Listing Rules by which the market will operate before approval is given. The ASX Listing Rules deal with the listing and quotation of securities, market information, trading and settlement, and general supervisory matters, and are key to meeting the ASX's objective of providing a fair and well-informed market for financial securities that is internationally competitive. ASX Compliance—a wholly owned subsidiary company of the ASX—is responsible for monitoring and enforcing compliance with the operating rules by market, clearing and settlement participants. The legislation also requires dealers in securities (stockbrokers) to meet certain conditions and to be licensed by ASIC. ASIC supervises trading on Australia's domestic licensed markets and the trading participants to detect suspected breaches of the market rules, such as insider trading (to be discussed next), which are prohibited under relevant sections of the law.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Also of relevance to the conduct of the market and its participants is the *Consumer and Competition Act 2010* (formerly the *Trade Practices Act 1974*). The Australian Competition and Consumer Commission (ACCC) administers the legislation to protect competition in the market and to ensure that no misleading or deceptive conduct takes place. This is part of its economy-wide brief to ensure fair trading in all markets.

Insider Trading There are a number of practices that could—if left unchecked—undermine the fairness of Australia's public equity markets. One of the more damaging practices is insider trading. **Insider trading** involves using private information to make profitable securities transactions. It is both illegal and unethical. Section 1043A of the *Corporations Act 2001* prohibits certain conduct by a person in possession of *non-public* information that a reasonable person would expect to have a material effect on the price or value of securities if it were available. While 'insiders' were typically viewed as being a company's directors, officers, major shareholders, bankers, merchant bankers, accountants or lawyers, this definition has now been expanded to include anyone who obtains private information about a company. Of course, insiders are not legally prohibited from trading the company's shares once private information becomes public.

insider trading
the illegal use of material non-public information about a company to make profitable securities transactions.

ethics
standards of conduct or moral judgment.

Clearly, insider-trading cases help to heighten the public's awareness of **ethics**—standards of conduct or moral judgment—in business. The financial community is continuing to develop and enforce ethical standards that will motivate market participants to adhere to laws and regulations. Although it is indeed difficult to enforce ethical standards, continuing vigilance against abuses in the financial markets will provide a more level playing field for all investors.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

2.8 Briefly describe the problem of insider trading. How is it regulated?

2.9 Is there a place for 'ethics' in the investment community?

Basic Types of Securities Transactions

LG 6

An investor can make a number of basic types of security transactions. Each type is available to those who meet certain requirements established by various government agencies as well as by brokerage companies. Although the various types of transactions can be used in a number of ways to meet investment objectives, we describe only the most popular use of each transaction here. The three most common types of transaction are the long purchase, margin trading and short selling.

Long Purchase

long purchase
a transaction in which investors buy securities in the hope that they will increase in value and can be sold at a later date for profit.

A **long purchase** is a transaction in which investors buy securities in the hope that they will increase in value and can be sold at a later date for profit. The object, then, is to buy low and sell high. A long purchase is the most common type of transaction. Each of the basic types of orders that we have described can be used with long transactions. Because investors generally expect the price of a security to rise over the period of time they plan to hold it, their return comes from any dividends or interest received during

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

the ownership period, *plus* the difference (capital gain) between the price at which they sell the security and the price paid to purchase it. This return, of course, is reduced by the transaction costs.

Ignoring any dividends (or interest) and transaction costs, we can illustrate the long purchase by a simple example. After studying various aspects of Varner Industries, you are convinced that its shares, which currently sell for $2 per share, will increase in value over the next few years. On the basis of your analysis, you expect the share price to rise to $3 within two years. You place a limit order and buy 1000 shares of Varner for $2. If the share price rises to, say, $4 per share, you will profit from your long purchase; if it drops below $2 per share, you will experience a loss on the transaction. Obviously, one of the major motivating factors in making a long transaction is an expected rise in the price of the security.

Margin Trading

margin trading
the use of borrowed funds to purchase securities; magnifies returns by reducing the amount of capital that the investor must put up.

Security purchases don't have to be made on a cash basis; borrowed funds can be used instead. This activity is referred to as **margin trading**, and it is used for one basic reason: to magnify returns. A bank, brokerage company or other financial institution lends the purchaser the needed funds and retains the purchased securities as collateral. It is important to recognise that margin purchasers must pay a specified rate of interest on the amount they borrow.

Most financial institutions that provide margin loans have a list of investments that they are prepared to lend against. Depending on the potential volatility of returns, lenders will limit the amount they will finance. A typical lending ratio (per cent loan to security value) ranges from 40% to 75% of the market value of the security.

A simple example will help to clarify the basic margin transaction. Assume you wish to purchase 700 shares which are currently selling for $6.35 per share. Assuming a margin loan of 60%, you need to put up only $1778 in cash ($6.35 per share × 700 shares × 0.40). The remaining $2667 ($6.35 per share × 700 shares × 0.60) will be provided by the lender. You will, of course, have to pay interest on the amount you borrow, plus the applicable fees. With the use of margin, investors can purchase more securities than they could afford on a strictly cash basis. In this way, investors can magnify their returns (as demonstrated in a later section).

Although margin trading can lead to increased returns, it also presents substantial risks. One of the biggest is that the shares may not perform as expected. If this occurs, no amount of margin trading can correct matters. Margin trading can only *magnify* returns, not *produce* them, and if the security's return is negative, margin trading magnifies that loss. Because the security being margined is always the ultimate source of return, *choosing the right securities is critical to this trading strategy.*

Essentials of Margin Trading Margin trading can be used with most kinds of securities. It is regularly used, for example, with ordinary shares, some bonds, options, warrants, futures and managed funds.

financial leverage
the use of debt financing to magnify investment returns.

Magnified Profits and Losses With an investor's equity serving as a base, the idea of margin trading is to employ **financial leverage**—the use of debt financing to magnify investment returns. Here is how it works. Suppose you have $5000 to invest and are considering the purchase of 1000 shares at $5 per share because you feel the shares in question will go up in price. If you don't margin, you can buy 1000 shares outright (ignoring brokerage commissions). However, if you margin the transaction—for example, at 50%—you can acquire the same $5000 position with only $2500 of your own money. This leaves you with $2500 to use for other investments or to buy on

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

margin another 1000 shares of the same security. Either way, by margining you will reap greater benefits from the share's price appreciation.

The concept of margin trading is more fully illustrated in Table 2.1. An unmargined (100% equity) transaction is depicted, along with the same transaction using various margin loan percentages. When the investment is unmargined and the price of the share goes up by $3 per share (see Table 2.1, part A), the investor enjoys a very respectable 60% rate of return. However, observe what happens when margin is used: the rate of return shoots up as high as 120%, depending on the amount of equity in the investment. This is so because the gain is the same ($3000) *regardless of how the transaction is financed*. Clearly, as the investor's equity in the investment *declines* (with higher margin loans), the rate of return *increases* accordingly.

Three facets of margin trading become obvious from the table: (1) the price of the share will move in whatever way it is going to regardless of how the position is financed; (2) the lower the amount of the investor's equity in the position, *the greater the rate of return* the investor will enjoy when the price of the security rises; and (3) *the loss is also magnified* (by the same rate) when the price of the security falls (see Table 2.1, part B).

Advantages and Disadvantages of Margin Trading A magnified return is the main advantage of margin trading. The size of the magnified return depends on both the price behaviour of the security being margined and the amount of margin being used. Another, more modest, benefit of margin trading is that it allows for greater diversification of security holdings, because investors can spread their capital over a greater number of investments.

The main disadvantage of margin trading, of course, is the potential for magnified losses if the price of the security falls. Another disadvantage is the cost of the margin

TABLE 2.1 The Effect of Margin Trading on Security Returns

	Without Margin (100% Equity)	With Margin Loans of 20%	With Margin Loans of 35%	With Margin Loans of 50%
Number of $5 shares purchased	1000	1000	1000	1000
Cost of investment	$5000	$5000	$5000	$5000
Less: borrowed money	0	1000	1750	2500
Equity in investment	$5000	$4000	$3250	$2500
A. Investor's position if price rises by $3 to $8/share				
Value of shares	$8000	$8000	$8000	$8000
Less: cost of investment	5000	5000	5000	5000
Capital gain	$3000	$3000	$3000	$3000
Return on investor's equity (capital gain/ equity in investment)	60%	75%	92.3%	120%
B. Investor's position if price falls by $3 to $2/share				
Value of shares	$2000	$2000	$2000	$2000
Less: cost of investment	5000	5000	5000	5000
Capital loss	$3000	$3000	$3000	$3000
Return on investor's equity (capital loss/ equity in investment)*	(60%)	(75%)	(92.3%)	(120%)

*With a capital loss, return on investor's equity is *negative*.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

margin loan
a vehicle through which borrowed funds are made available, at a stated interest rate, in a margin transaction.

prime rate
the lowest interest rate charged to the best business borrowers.

loans themselves. A **margin loan** is the official vehicle through which the borrowed funds are made available in a margin transaction. All margin loans are made at a stated interest rate, which depends on prevailing market rates and the amount of money being borrowed. This rate is usually 1–3% above the **prime rate**—the lowest interest rate charged to the best business borrowers; for large accounts, it may be at the prime rate. The loan cost, which must be paid by the investor, will increase daily, reducing the level of profits (or increasing losses) accordingly.

Making Margin Transactions To execute a margin transaction, an investor must establish a margin loan. Most lenders will set a minimum amount for borrowing. There are basically two types of margin requirements: initial margin and margin calls.

initial margin
the minimum amount of equity that must be provided by a margin investor at the time of purchase.

Initial Margin The minimum amount of equity that must be provided by the investor *at the time of purchase* is the **initial margin**. It is the minimum amount of equity that must be provided by the borrower and is used to prevent overtrading, excessive speculation and potential losses by the lender. All securities that can be margined have specific maximum loan to value ratio requirements as set by the lender. Table 2.2 provides examples of maximum margin loan ratios for some selected investments as established by St George Bank. Note that each financial institution decides individually which securities they are prepared to finance and the maximum loan ratios they are prepared to lend up to. These can be changed at the discretion of the lender.

As long as the margin loan ratio remains at a level equal to or less than the initial requirements, the investor may continue to use the loan facility. However, if the market value of the investor's holdings declines, the loan ratio will rise.

margin call
notification of the need to reduce the loan balance so as to meet the maximum loan ratio set for the investment(s).

Margin Call If the market value of an investor's margined securities falls to a point where the maximum loan ratio is exceeded, an investor will receive a **margin call**. This is a notification of the need to reduce the loan balance so as to meet the maximum loan ratio set for the investment(s). This can be achieved by either: (1) depositing money into your margin loan account (that is, increase the equity); (2) providing additional acceptable collateral; or (3) selling part of the portfolio and repaying part of the loan from the proceeds. Lenders will often allow a 'buffer zone' of 5–10% before instigating a margin call.

The margin call protects both the lenders and investors: lenders avoid having to absorb excessive investor losses, and investors avoid being wiped out. Failure to meet a margin call within the prescribed time (often within 24 hours) will force the lender to bring the loan into order by selling some or all of the margined securities.

INVESTOR FACTS

GOING INTO HOCK FOR STOCK— Australian investors have really caught on to the use of margin loans (debt) to finance their increasing demand for share ownership. At the end of June 2010, margin loan balances outstanding totalled around $18.8 billion on the books of stockbrokers and major banks. There were approximately 206 000 margin loan client accounts in Australia, and the average loan balance was about $91 150.

TABLE 2.2 Maximum Loan Ratios for Selected Investments—St George Bank

Security	Maximum Loan Ratio (%)
National Australia Bank Ltd	75
Newcrest Mining Ltd	70
Coca-Cola Amatil Ltd	75
Hills Industries Ltd	60
Oil Search Ltd	70
Managed funds (unit trusts)	50–75 *

* Generally, depending on type of fund.
(*Source:* St George Margin Lending, <www.stgeorge.com.au>, as at October 2010.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Return on Invested Capital When assessing the return on margin transactions, you must take into account the fact that you put up only part of the funds. Therefore, you are concerned with the *rate of return* earned on only the portion of the funds that you provided. Using both current income received from dividends or interest and total interest paid on the margin loan, we can apply Equation 2.1 to determine the return on invested capital from a margin transaction:

Equation 2.1

$$\text{Return on invested capital from a margin transaction} = \frac{\text{Total current income received} - \text{Total interest paid on margin loan} + \text{Market value of securities at sale} - \text{Market value of securities at purchase}}{\text{Amount of equity at purchase}}$$

This equation can be used to calculate either the expected or the actual return from a margin transaction. To illustrate: assume you want to buy 1000 shares at $5 per share because you feel that the unit price will rise to $7.50 within six months. The share pays $0.20 in annual dividends (though with the six-month holding period, you will receive only half of that amount, or $0.10 per share). You are going to buy the shares with a 50% margin loan and will pay 10% interest on the loan. Therefore, you are going to put up $2500 equity to buy $5000 worth of shares that you hope will increase to $7500 in six months. Because you will have a $2500 margin loan outstanding at 10% for six months, you will pay $125 in total interest costs ($2500 × 0.10 × (6 ÷ 12) = $125). We can substitute this information into Equation 2.1 to find the expected return on invested capital from this margin transaction:

$$\text{Return on invested capital from a margin transaction} = \frac{\$100 - \$125 + \$7500 - \$5000}{\$2500} = \frac{\$2475}{\$2500} = 0.99 = \underline{99\%}$$

Keep in mind that the 99% figure represents the rate of return earned over a six-month holding period. If you wanted to compare this rate of return to other investment opportunities, you could determine the transaction's annualised rate of return by multiplying by 2 (the number of six-month periods in a year). This would amount to 198% (99% × 2 = 198%).

Uses of Margin Trading Margin trading is most often used in one of two ways. As we have seen, one of its uses is to magnify transaction returns. The other main margin tactic is called pyramiding, which takes the concept of magnified returns to its limits. **Pyramiding** uses the paper profits from increased share values to partly or fully finance the acquisition of additional securities. In fact, with this technique it is even possible to buy securities with no new cash at all; rather, they can all be financed entirely with margin loans. The reason is that the paper profits in the account lead to **excess margin**—that is, surplus borrowing capacity in a margin loan. For instance, if a margin loan has a balance of $20 000 related to securities worth $50 000, the margin loan ratio is 40% ($20 000 ÷ $50 000). This account would hold a substantial excess margin if the relevant maximum loan ratio for a potential investment were 75%.

pyramiding
the technique of using paper profits to partly or fully finance the acquisition of additional securities through a margin loan.

excess margin
surplus borrowing capacity in a margin loan.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The principle of pyramiding is to use the excess margin in the loan account to purchase additional securities. The only constraint, and the key to pyramiding, is that when the additional securities are purchased, the investor's margin ratio must be below the lender's maximum for the securities concerned. If the loan account has excess margin, the investor can use it to build up security holdings. Pyramiding can continue as long as there are additional paper profits from increased share values and as long as the maximum margin loan levels are not exceeded. The tactic is somewhat complex but is also profitable, especially because it minimises the amount of new capital required in the investor's account.

In general, margin trading is simple, but it is also risky. Risk is primarily associated with potential price declines in the margined securities. If prices fall enough, the resulting *margin call* will force the investor to deposit additional equity into the account almost immediately. In addition, losses (resulting from the price decline) are magnified in a fashion similar to that demonstrated in Table 2.1, part B. Clearly, the chance of a margin call and the magnification of losses make margin trading more risky than non-margined transactions. Margin trading should be used only by investors who fully understand its operation and appreciate its pitfalls.

Short Selling

In most cases, investors buy shares hoping that the price will rise. What if an investor expects the price of a particular security to fall? By using short selling, the investor may be able to profit from falling security prices. The ASX has approved short selling only for certain securities, and the number of shares that can be short sold in these so-called approved securities is limited. The list of approved securities is updated daily.

short selling
the sale of borrowed securities, their eventual repurchase by the short seller and their return to the lender.

Essentials of Short Selling **Short selling** is generally defined as the practice of selling borrowed securities. Short sales start when securities that have been borrowed from a broker are sold in the marketplace. Later, when the price of the issue has declined, the short seller buys back the securities, which are then returned to the lender. A short seller must make an initial equity deposit with the broker, subject to rules similar to those for margin trading. The deposit plus the proceeds from sale of the borrowed shares assure the broker that sufficient funds are available to buy back the short-sold securities at a later date, even if their price increases. Short sales, like margin transactions, require investors to work through a broker.

Making Money When Prices Fall Making money when security prices fall is what short selling is all about. Like their colleagues in the rest of the investment world, short sellers are trying to make money by *buying low and selling high*. The only difference is that they reverse the investment process: *they start the transaction with a sale and end it with a purchase*.

Table 2.3 shows how a short sale works and how investors can profit from such transactions. (For simplicity, we ignore transaction costs.) The transaction results in a net profit of $2000 as a result of an initial sale of 1000 shares at $5 per share (step 1) and subsequent covering (purchase) of the 1000 shares for $3 per share (step 2). The amount of profit or loss generated in a short sale depends on the price at which the short seller can buy back the shares. Short sellers earn profit only when the proceeds from the sale of the shares are greater than the cost of buying them back.

Advantages and Disadvantages The main advantage of selling short is, of course, the chance to profit from a price decline. The key disadvantage of many short-sale transactions is that the investor faces limited return opportunities, along with high risk

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 2.3 The Mechanics of a Short Sale

Step 1—Short sale initiated:	
1000 borrowed shares are sold at $5/share:	
Proceeds from sale to investor	$5000
Step 2—Short sale covered:	
Later, 1000 shares are purchased at $3/share and returned to broker from whom shares were borrowed:	
Cost to investor	3000
Net profit	$2000

exposure. The price of a security can fall only so far (to a value of or near zero), yet there is really no limit to how far such securities can rise in price. (Remember, a short seller is hoping for a price decline; when a security goes up in price, a short seller loses.) For example, note in Table 2.3 that the shares in question cannot possibly fall by more than $5, yet who is to say how high its price can go?

A less serious disadvantage is that short sellers never earn dividend (or interest) income. In fact, short sellers owe the lender of the shorted security any dividends (or interest) paid while the transaction is outstanding. That is, if a dividend is paid during the course of a short-sale transaction, the short seller must pay an equal amount to the lender of the shares. (The mechanics of these payments are taken care of automatically by the short seller's broker.)

Uses of Short Selling Investors short sell primarily to seek speculative profits when they expect the price of a security to drop. Because the short seller is betting against the market, this approach is subject to a considerable amount of risk. The actual procedure works as demonstrated in Table 2.3. Note that had you been able to sell the shares at $5 and later repurchase them at $3 per share, you would have generated a profit of $2000 (ignoring dividends and brokerage commissions). However, if the market had instead moved against you, all or most of your $5000 investment could have been lost.

For those wishing to profit from expected falling markets, there may be a less risky alternative available. The purchase of exchange traded put options can be a smarter move, as will be discussed in Chapter 14.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

2.10 What is *a long purchase?* What expectation underlies such a purchase? What is *margin trading,* and what is the key reason why it is sometimes used as part of a long purchase?

2.11 How does margin trading magnify profits and losses? What are the key advantages and disadvantages of margin trading?

2.12 Describe the procedures and regulations associated with margin trading. Be sure to explain the margin call. Describe the common uses of margin trading.

2.13 What is the primary motive for short selling? Describe the basic short sale procedure. Why must the short seller make an initial margin deposit?

2.14 Describe the key advantages and disadvantages of short selling. How are short sales used to earn speculative profits?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Identify the basic types of securities markets and describe the IPO process. Short-term investment vehicles are traded in the money market; longer-term securities, such as shares and bonds, are traded in the capital market. New security issues are sold in the primary market. Once securities have been issued, investors buy and sell them in the secondary markets. The first public issue of a company's shares is called an initial public offering (IPO). The company selects a financial adviser, who assists with the pricing and sale of the shares and who may act as underwriter to the issue. A syndicate of underwriters may be formed for very large issues.

LG 2 Explain the characteristics of organised securities exchanges. Organised exchanges include the Australian Securities Exchange (ASX), the New York Stock Exchange (NYSE), foreign securities exchanges and other specialised exchanges. The organised exchanges act as secondary markets in which existing securities are traded.

LG 3 Understand the over-the-counter markets and the general conditions of securities markets. The over-the-counter (OTC) market acts as a primary market in which initial public offerings (IPOs) are made, and it also handles secondary trading in unlisted securities. It is a dealer market in which negotiation and dealer quotes, often obtained through its automated system, determine price. Market conditions are commonly classified as 'bull' or 'bear', depending on whether securities' prices are generally rising or falling.

LG 4 Review the importance of global securities markets, their performance, and the investment procedures and risks associated with foreign investments. Today, securities markets must be viewed globally. Securities exchanges operate in over 100 countries—both large and small. Foreign security investments can be made indirectly by buying shares of an Australian-based multinational with substantial foreign operations or by purchasing shares of a managed fund that invests primarily in foreign securities. Direct foreign investment can be achieved by purchasing securities on foreign exchanges or by buying securities of foreign companies that are traded on the ASX. International investments can enhance returns, but they entail added risk, particularly currency exchange risk.

LG 5 Discuss the regulation of securities markets. The securities markets are regulated by the Australian Securities and Investments Commission (ASIC). The key laws regulating the securities industry are the *Corporations Act 2001* and the *Consumer and Competition Act 2010*.

Key Terms

ask price, *p. 30*
Australian Securities & Investments Commission (ASIC), *p. 26*
bear markets, *p. 31*
bid price, *p 30*
bull markets, *p. 31*
capital market, *p. 26*
dealers, *p. 30*
initial public offering (IPO), *p. 26*
money market, *p. 26*
Nasdaq, *p. 30*
organised securities exchanges, *p. 27*
over-the-counter (OTC) market, *p. 27*
primary market, *p. 26*
private placement, *p. 26*
public offering, *p. 26*
rights offering, *p. 26*
secondary distributions, *p. 30*
secondary market, *p. 27*
securities markets, *p. 26*
underwriting, *p. 26*
underwriting syndicate, *p. 26*

currency exchange rate, *p. 34*
currency exchange risk, *p. 34*
diversification, *p. 32*

ethics, *p. 36*
insider trading, *p. 36*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 6 Explain long purchases and the motives, procedures and calculations involved in making margin transactions and short sales. Most investors make long purchases—buy low, sell high—in expectation of price increases. Many investors establish margin accounts to use borrowed funds to enhance their buying power. The lender establishes the margin requirement—the minimum investor equity in a margin transaction, both initially and during the margin transaction. The return on invested capital in a margin transaction is magnified; positive returns *and* negative returns are larger than in a comparable unmargined transaction. Paper profits can be used to pyramid a margin account by investing its excess margin. The risks of margin trading are the chance of a restricted account or margin call and the consequences of magnification of losses due to price declines. Short selling is used when a decline in security prices is anticipated. It involves selling borrowed securities with the expectation of earning a profit by repurchasing them at a lower price in the future. To execute a short sale, the investor must make an initial equity deposit with the broker. The investor borrows the shares from the broker. The main advantage of selling short is the chance to profit from a price decline. The disadvantages of selling short are that the return opportunities are limited in spite of the unlimited potential for loss, and that short sellers never earn dividend (or interest) income. Short selling is used primarily to seek speculative profits from an anticipated decline in share price.	excess margin, *p. 40* financial leverage, *p. 37* initial margin, *p. 39* long purchase, *p. 36* margin call, *p. 39* margin loan, *p. 39* margin trading, *p. 37* prime rate, *p. 39* pyramiding, *p. 40* short selling, *p. 41*

Discussion Questions

LG 1

Q2.1 Discuss the pros and cons of listing on the ASX.

LG 2 LG 3 LG 4

Q2.2 On the basis of the current structure of the world's financial markets and your knowledge of the ASX and the NYSE, describe the key features, functions and problems faced by a single global market (exchange) on which transactions can be made in all securities of all of the world's major companies. Discuss the likelihood of such a market developing.

LG 6

Q2.3 Describe how a conservative and an aggressive investor might use, if at all, each of the following types of transactions as part of their investment programs. Contrast these two types of investors in view of these preferences.

a. Long purchase
b. Margin trading
c. Short selling

Problems

All problems are available on **www.pearson.com.au/myfinancelab**

LG 4

P2.1 In each of the following cases, calculate the price of one share of the foreign security measured in Australian dollars.

a. A New Zealand share priced at 8.55 New Zealand dollars (NZ$) when the exchange rate is NZ$1.3172/A$1
b. A French share priced at 24.70 euros (€) when the exchange rate is €0.7064/A$1
c. A Japanese share priced at 1350 yen (¥) when the exchange rate is ¥80.27/A$1

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG4 **P2.2** Lola Paretti purchased 50 shares of BMW, a German share traded on the Frankfurt Exchange, for 35 euros per share exactly one year ago, when the exchange rate was A 0.6354/A$1. Today the share is trading at A 38 per share, and the exchange rate is A 0.7064/A$1.

a. Did the euro depreciate or appreciate relative to the Australian dollar during the past year? Explain.

b. How much in Australian dollars did Lola pay for her 50 shares of BMW when she purchased them a year ago?

c. How much in Australian dollars can Lola sell her BMW shares for today?

d. Ignoring brokerage fees and taxes, how much profit (or loss) in Australian dollars will Lola realise on her BMW shares if she sells them today?

LG6 **P2.3** Elmo Limited's shares are currently selling at $6 per share. For each of the following situations (ignoring brokerage commissions), calculate the gain or loss that Maureen Katz realises if she makes a 1000-share transaction.

a. She sells short and repurchases the borrowed shares at $7 per share.

b. She takes a long position and sells the shares at $7.50 per share.

c. She sells short and repurchases the borrowed shares at $4.50 per share.

d. She takes a long position and sells the shares at $6 per share.

LG6 **P2.4** Assume an investor buys 1000 shares at $5 per share, using a margin loan to finance 30% of the purchase. If the share price rises to $8, what is the investor's new position?

LG6 **P2.5** Jerri Kingston bought 1000 shares at $8 per share using a margin loan to finance 40% of the purchase. Given the lender's maximum loan to value ratio is 75%, how far does the share price have to drop before Jerri faces a margin call? (Assume there are no other securities forming part of the margin loan.)

LG6 **P2.6** An investor buys 2000 shares at $8 per share, using a margin loan to finance 40% of the purchase. The share pays annual dividends of $0.10 per share, and a margin loan can be obtained at an annual interest cost of 8%. Determine what return on invested capital the investor will realise if the price of the share increases to $10.40 within six months. What is the annualised rate of return on this transaction?

LG6 **P2.7** Marlene Bellamy purchased 3000 shares of Writeline Communications Limited at $5.50 per share using a margin loan to finance 50% of the purchase. She held the shares for exactly four months and sold them without any brokerage costs at the end of that period. During the four-month holding period, the shares paid $0.15 per share in cash dividends. Marlene was charged 9% annual interest on the margin loan. The maximum loan to value ratio allowed by the margin lender was 75%.

a. Calculate the initial value of the transaction, the margin loan balance and the equity position on Marlene's transaction.

b. For each of the following share prices, calculate the actual margin loan to value percentage and indicate whether Marlene's margin loan account would have excess equity or be subject to a margin call.

i. $4.50 **ii.** $7

iii. $3.30

c. Calculate the dollar amount of (i) dividends received and (ii) interest paid on the margin loan during the four-month holding period.

d. Use each of the following sale prices at the end of the four-month holding period to calculate Marlene's annualised rate of return on the Writeline Communications share transaction.

i. $5 **ii.** $6

iii. $7

LG6 **P2.8** Not long ago, Dave Edwards bought 2000 shares of Almost Anything Ltd at $4.50 per share; he bought the shares using a margin loan to finance 40% of the purchase. The shares are now trading at $6 each, and the margin lender is prepared to accept a loan ratio up to 50%. Dave now wants to do a little pyramiding and buy another 3000 shares of the company. What is the minimum amount of equity he will have to put up in this transaction?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG6 **P2.9** Calculate the profit or loss per share realised on each of the following short-sale transactions.

Transaction	Sold Short at Price/Share	Purchased to Cover Short at Price/Share
A	$7.50	$8.30
B	3.00	2.40
C	1.80	1.50
D	2.70	3.20
E	5.30	4.50

LG6 **P2.10** Charlene Hickman expected the price of Bio International shares to drop in the near future in response to the expected failure of its new drug to be approved for sale. As a result, she sold short 2000 shares of Bio International at $2.75. How much would Charlene earn or lose on this transaction if she repurchased the 2000 shares four months later at each of the following prices per share?

a. $2.48 **b.** $2.51
c. $3.12 **d.** $2.20

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 2.1 DARA'S DILEMMA: WHAT TO BUY?

Dara Simmons, a 40-year-old financial analyst and divorced mother of two teenage children, considers herself a savvy investor. She has increased her investment portfolio considerably over the past five years. Although she has been fairly conservative with her investments, she now feels more confident in her investment knowledge and would like to branch out into some new areas that could bring higher returns. She has between $20 000 and $25 000 to invest.

Attracted to the hot market for technology stocks, Dara was interested in purchasing a tech IPO stock and identified 'NewestHighTech.com,' a company that makes sophisticated computer chips for wireless Internet connections, as a likely prospect. The one-year-old company had received some favorable press when it got early-stage financing and again when its chip was accepted by a major cell phone manufacturer.

Dara also was considering an investment in 400 shares of Casinos International common stock, currently selling for $54 per share. After a discussion with a friend who is an economist with a major commercial bank, Dara believes that the long-running bull market is due to cool off and that economic activity will slow down. With the aid of her stockbroker, Dara researches Casinos International's current financial situation and finds that the future success of the company may hinge on the outcome of pending court proceedings on the firm's application to open a new floating casino on a nearby river. If the permit is granted, it seems likely that the firm's stock will experience a rapid increase in value, regardless of economic conditions. On the other hand, if the company fails to get the permit, the falling stock price will make it a good candidate for a short sale.

Dara felt that the following alternatives were open to her:

Alternative 1: Invest $20,000 in NewestHighTech.com when it goes public.

Alternative 2: Buy Casinos International now at $54 per share and follow the company closely.

Alternative 3: Sell Casinos short at $54 in anticipation that the company's fortunes will change for the worse.

Alternative 4: Wait to see what happens with the casino permit and then decide whether to buy or short the Casinos International stock.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

QUESTIONS

1. Evaluate each of these alternatives. On the basis of the limited information presented, recommend the one you feel is best.
2. If Casinos International's stock price rises to $60, what will happen under alternatives 2 and 3? Evaluate the pros and cons of these outcomes.
3. If the stock price drops to $45, what will happen under alternatives 2 and 3? Evaluate the pros and cons of these outcomes.

Case Problem 2.2 RAVI DUMAR'S HIGH-FLYING MARGIN ACCOUNT

Ravi Dumar is a stockbroker who lives with his wife, Sasha, and their five children in Adelaide. Ravi firmly believes that the only way to make money in the market is to follow an aggressive investment posture—for example, to use margin trading. In fact, Ravi himself has built a substantial amount of equity over the years. He currently holds $75 000 worth of shares and his margin loan account stands at only $30 000. Recently, Ravi uncovered a share that, on the basis of extensive analysis, he feels is about to take off. The share, Running Shoes Ltd (RS), currently trades at $2 per share. Ravi feels it should soar to at least $5 within a year. RS pays no dividends, the margin lender is prepared to accept a loan to value ratio of up to 50% for his portfolio, and margin loans are now carrying an annual interest charge of 10%. Because Ravi feels so strongly about RS, he wants to do some pyramiding by using his margin loan account to purchase 10 000 shares.

QUESTIONS

1. Discuss the concept of pyramiding as it applies to this investment situation.
2. Ravi buys the 10 000 shares of RS through his margin account. (Bear in mind that this is a $20 000 transaction.)
   a. What will the loan ratio of the margin account be after the RS transaction if Ravi uses $10 000 from the margin loan and $10 000 of his own money to buy the shares?
   b. What if he uses only $2500 equity and obtains a margin loan for the balance ($17 500)?
   c. How do you explain the fact that the shares can be purchased using 87.5% debt from the margin loan when the prevailing maximum loan ratio is 50%?
3. Assume that Ravi buys 10 000 shares of RS at $2 per share with a minimum cash investment of $2500 and that the share does take off and its price rises to $4 per share in a year.
   a. What is the return on invested capital for this transaction?
   b. What return would Ravi have earned if he had bought the shares without using a margin loan—that is, if he had used all of his own money?
4. What do you think of Ravi's idea to pyramid? What are the risks and rewards of this strategy?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Excel with Spreadsheets

You have just learned about the mechanics of margin trading and want to take advantage of the potential benefits of financial leverage. You have decided to open a margin account with your broker and to secure a margin loan. The specifics of the account are as follows:

- Initial margin requirement is 70%.
- Maintenance margin is 30%.

You are informed that if the value of your account falls below the maintenance margin, your account will be subject to a margin call.

You have been following the price movements of a share over the past year and believe that it is currently undervalued and that the price will rise in the near future. You feel that the opening of a margin account is a good investment strategy. You have decided to purchase three round lots (i.e. 100 shares per round lot) of the share at its current price of $25 per share.

Create a spreadsheet similar to the spreadsheet for Table 2.3, which can be viewed at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885, to model and analyse the following market transactions.

Questions

1. Calculate the value of the investment in the share as if you did not make use of margin trading. In other words, what is the value of the investment if it is funded by 100% cash equity?

2. Calculate the debit balance and the cash equity in the investment at the time of opening a margin account, adhering to the initial margin requirement.

3. If you use margin and the price of the share rises by $15 to $40 per share, calculate the capital gain earned and the return on investor's equity.

4. What is the current margin percentage based on question **2**?

5. If you use margin and the price of the share falls by $15 to $10 per share, calculate the capital loss and the respective return on investor's equity.

6. What is the new margin percentage based on question **5**, and what is the implication for you, the investor?

After reading this chapter, you know how an investor goes about buying and selling securities and are acquainted with the operating characteristics of the various markets—primary, secondary, capital and money markets—where securities are traded. Most investors complete their trading in the secondary markets. Prices in these markets change rapidly throughout the day. The Web is very effective at providing the investor with timely information about the current price of an asset. It also provides up-to-the-minute data on how the overall market is doing for a particular type of asset, such as shares or bonds. The following websites offer important and timely information about the main Australian markets.

WEBSITE	URL
Australian Securities Exchange	www.asx.com.au
Trading Room	www.tradingroom.com.au

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER 3

Investment Information and Securities Transactions

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Discuss the growth in online investing, including educational sites and investment tools, and the effective use of the Internet.
- LG2 Identify the main types and sources of traditional and online investment information.
- LG3 Explain the characteristics, interpretation and uses of the commonly cited share and bond market averages and indices.
- LG4 Review the roles of traditional and online stockbrokers, including the services they provide, selection of a stockbroker, opening an account and transaction basics.
- LG5 Describe the basic types of orders (market, limit and stop-loss), online transactions, transaction costs, and the legal aspects of investor protection.
- LG6 Discuss the roles of investment advisers and investment clubs.

The Motley Fool

In Elizabethan days, the motley fool was the court jester who wore multicoloured garb. Fools were the only people who could get away with telling the king or queen the truth. The Motley Fool website (www.fool.com) was created by two American college students who studied more Shakespeare than they studied investments. Despite this, they are now in the business of offering investment advice. David and Tom Gardner talk to their readers in a straightforward manner. They ask investors to think for themselves, giving them the tools to do so. The Motley Fool's strategy for beginners is: (1) learn the fundamentals of investment research, (2) reduce debt before beginning, (3) start with managed funds that mimic the major share indices, and (4) invest in shares you expect to hold for a long time.

Although intended for US investors, the principles espoused by David and Tom in investment strategy, retirement planning and personal finance can be applied internationally.

Fool.com is one of many websites where investors can learn about, choose, and buy and sell securities. The Internet has revolutionised the financial services industry, empowering individual investors and simplifying the investing process. In this chapter, you'll learn how to use online investment resources wisely and find the information to make and monitor investment decisions. We'll discuss the basics of making securities transactions through a traditional broker or online, as well as whether to hire an investment adviser or join an investment club. Most of this material is serious and straightforward. But as the Motley Fool has shown, some aspects of investing can also be fun.

49

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Online Investing

LG 1

Only a few years ago, online investing focused on finding the lowest transaction costs at one of a few discount brokers that offered cheap electronic trades. Today the Internet is a major force in the investing environment. It has opened the world of investing to individual investors, creating a more level playing field and providing access to tools formerly restricted to professionals. You can trade many types of securities online and also find a wealth of information. This information ranges from real-time share price quotes to securities analysts' research reports and tools for investment analysis. The savings from online investing in terms of time and money are huge. Instead of wading through mounds of paper, investors can quickly sort through vast databases to find appropriate investments, monitor their current investments and make securities transactions—all without leaving their computers.

This chapter introduces you to online investing, types and sources of investment information, and the basics of making securities transactions. We will continue discussing online investing in subsequent chapters focused on analysis and selection of various types of securities. In addition, throughout the book you will find descriptions of useful investing websites that will help you to become a more proficient and confident investor.

Because new websites appear every day and existing ones change constantly, it's impossible to describe all the good ones. Our intent is to give you a sampling of websites that will introduce you to the wealth of investing information available on the Internet. You'll find plenty of good sources to help you stay current. Many business and personal finance magazines include online investing departments and periodically publish 'best of the Web' or similar sections.

Getting Started in Online Investing

To successfully navigate the online investing universe, open your Web browser and explore the multitude of investing sites. These sites typically include a combination of resources for novice and experienced investors alike. For example, look at brokerage company Commonwealth Securities' home page (www.commsec.com.au), shown in Figure 3.1. With a few mouse clicks you can learn about its services, open an account and begin trading. In addition, you will find the day's and week's market activity, price quotes, news, analysts' research reports and more.

All this information can be overwhelming and intimidating. It takes time and effort to use the Internet wisely. But the Internet itself helps you to sort through the maze. Educational sites are a good place to start. Then you can check out the many investment tools. In the following section, we'll discuss how to use the Internet wisely to become a smarter investor.

Investment Education Sites The Internet offers many tutorials, online classes and articles to educate the novice investor. Although there are many Australia-specific sites, the vast majority of sites are American-based and focused. Such sites can still be useful to Australian investors who are considering investing in the US markets or where the principles presented can be applied internationally. Even experienced investors will find sites that expand their investing knowledge. Most investing-oriented websites and financial portals (described later) include many educational resources. Here

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 3.1 **Investment Resources at the CommSec website**

The CommSec website presents a wealth of investment resources. You can check the day's market news, get company research, look up the current price of a share, find shares and managed funds that meet specific investment objectives, and more.

CommSec
CommSec ID or A/C No
Password
Start In: Market deg
Login
Forgotten your password?
My Portfolio
Trading
Cash Management
Margin Lending
Managed Funds
News & Research
Products
Tools & Support
COMMSEC INTRODUCTORY OFFER
AVAILABLE NOW
EXCHANGE TRADED INTERNATIONAL SECURITIES
US share exposure on the ASX
Apple, Google, McDonald's & more
APPLY NOW
Why choose CommSec?
Trade from $19.95 (conditions apply)
Dedicated eLearning & Education Website
24 hour a day online or phone trading
Follow your favourite stocks
Earn 5.50%pa* on your cash
Reduced or no entry fees for over 1000 Managed Funds
Access floats and new issues
Join now
I'd like to...
Earn 5.50%pa* on my cash
Visit the NEW e-Learning Centre
Buy a share pack
Invest in managed funds
Invest in an IPO
Trade via my iPhone
Borrow to Invest
Work for CommSec
Trade via CommSecIRESS
More quick links
Apply for a...
Select
CommSec News
Trading hours for Easter holiday period
US share exposure on the ASX. Apple, Google, McDonald's and more
Man OM-IP Global – managed futures, international investments and a capital guarantee
Tailor made Combination (TMC) re-enabled
Free CommSec Seminars – limited places. Register Now
Audio and Video reports
All Ordinaries
All Ords
19 Apr
Dow Jones: 12201.59 -140.24
FTSE-100: 5870.08 -125.93
Hang Seng: 23830.31
NASDAQ: 2735.38 -29.27
Australian Shares
More
CommSec makes it easy to start investing in Australian Shares our customers trade from $19.95*, benefit from free online research, can trade 24 hour a day online or by phone, follow their favourite stocks and get access to IPOs and new issues.
Floats & IPOs | Contracts for Difference (CFDs) | International Shares | Options & Warrants
News & Research
More
Economic and sharemarket news from Australia and around the world, compiled by Commonwealth Bank and Commsec analysts.
Australian stockmarket report | Daily audio & video reports | Weekly report
Contact CommSec
Share Trading
Monday - Friday
8am - 8pm AEST
13 15 19
Visit our FAQs
Send us your question
View all CommSec contacts
Margin Lending
More
Expand your range of investment opportunities through margin lending. Margin loans increase your potential returns on shares or managed investment funds.
Regular Gearing Margin Loan | Approved Shares | Approved Managed Funds
Managed Funds
More
CommSec Direct Funds rebates up to 100% of entry fees and contribution fees on over 1,000 investment funds, superannuation, allocated pensions and structured products.
Investor Profile | Special Offers | Search for funds | Tax effective products
Exchange Rates
Currency
Value
Change
AUD / USD 1.04885 -0.23
AUD / NZD 1.333 0.28
AUD / JPY (yen) 86.395 -0.55
AUD / GBP 0.645 -0.2
AUD / EUR 0.737 -0.18
Service Difficulties | Important Information | Privacy Policy | Contact CommSec | Financial Services Guide
© Commonwealth Securities Limited ABN 60 067 254 399 AFSL 238814 ("CommSec") is a wholly owned, but non-guaranteed, subsidiary of the Commonwealth Bank of Australia ABN 48 123 123 124 AFSL 234945 ("the Bank") and both entities are incorporated in Australia with limited liability.
This site is directed and available to and for the benefit of Australian residents only (2011).

(*Source:* Commonwealth Securities, <www.commsec.com.au>.)

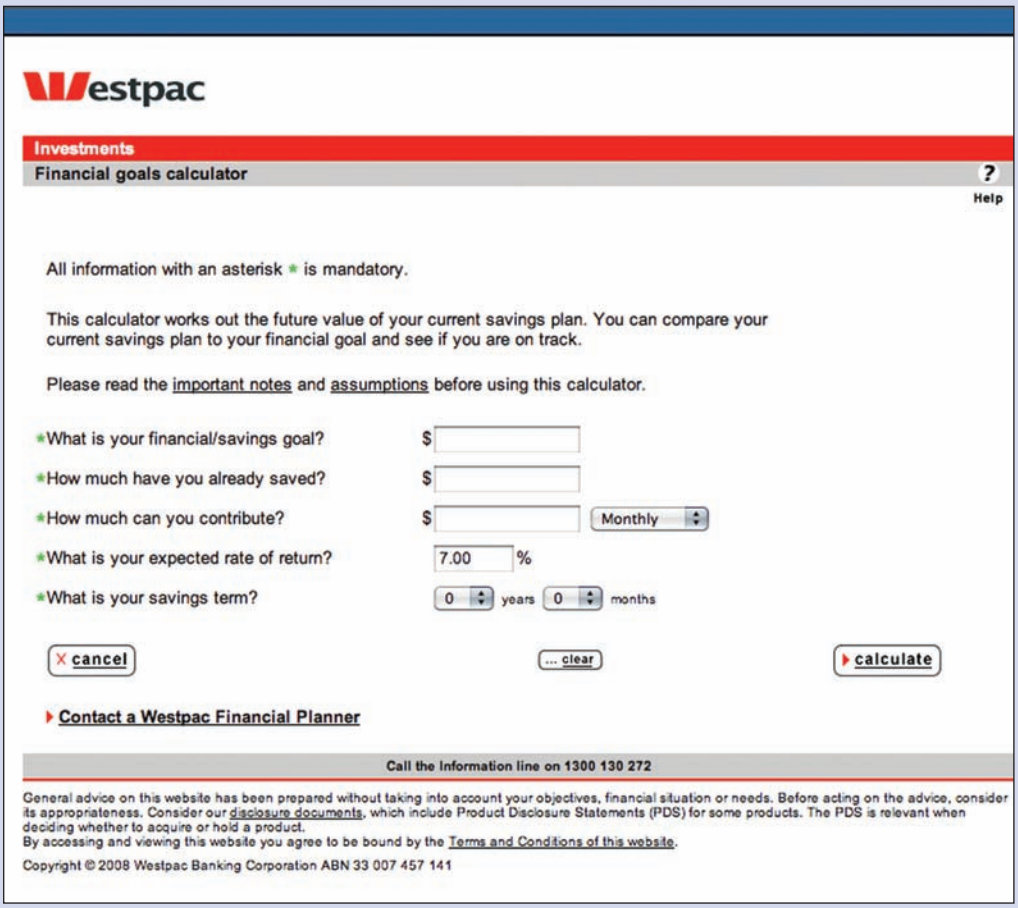
Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

are a few good sites that feature investing fundamentals: <www.fool.com>, <www.investopedia.com>, <www.vaneck.com>, <www.asx.com.au>, <www.moneymanager.com.au>, <www.money.ninemsn.com.au>, and most online broking sites.

Investment Tools Once you are familiar with investing basics, you can use the Internet to develop financial plans and set investment goals, find securities that meet your objectives, analyse potential investments and organise your portfolio. Many of these tools, once used only by professional investment advisers, are free online. You'll find financial calculators (Figure 3.2) and worksheets, screening and charting tools, and share price quotes and portfolio trackers at general financial sites and at the websites of larger brokerage companies. You can even set up a personal calendar that notifies you of forthcoming earnings announcements, and receive alerts when one of your shares has hit a predetermined price target.

FIGURE 3.2 Financial Calculators

At websites like Westpac's home page, you will find many calculators similar to the one shown here to help with setting savings goals. Input the variables for your situation, and the calculator will show you either how much you need to save each month or how long it will take you to achieve your goal.


Westpac
Investments
Financial goals calculator
Help
All information with an asterisk * is mandatory.
This calculator works out the future value of your current savings plan. You can compare your current savings plan to your financial goal and see if you are on track.
Please read the important notes and assumptions before using this calculator.
*What is your financial/savings goal?
*How much have you already saved?
*How much can you contribute?
Monthly
*What is your expected rate of return?
7.00
%
*What is your savings term?
years
months
cancel
clear
calculate
Contact a Westpac Financial Planner
Call the Information line on 1300 130 272
General advice on this website has been prepared without taking into account your objectives, financial situation or needs. Before acting on the advice, consider its appropriateness. Consider our disclosure documents, which include Product Disclosure Statements (PDS) for some products. The PDS is relevant when deciding whether to acquire or hold a product.
By accessing and viewing this website you agree to be bound by the Terms and Conditions of this website.
Copyright © 2008 Westpac Banking Corporation ABN 33 007 457 141

(*Source:* This page is © 2008 Westpac Banking Corporation ABN 33 007 457. Reproduced with permission; <www.westpac.com.au>.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Planning Online calculators and worksheets help you to find answers to your financial planning and investing questions. With them you can figure out how much to save each month for a particular goal, such as a deposit for your first home, a private education for your children, or retiring when you are 60. For example, Westpac (www.westpac.com.au) has a wide selection of planning tools: investment budget planner, financial goals calculator, retirement needs—even a financial goals calculator (see Figure 3.2). Similar calculators are available on the sites of most banks and other large financial institutions.

Screening With screening tools, you can quickly sort through huge databases of shares, bonds and managed funds to find those that have specific characteristics. For shares, you can specify various ratios, capitalisation value and so on. For managed funds, you might specify minimum investment, a particular industry or geographical sector, and low fees. Each screening tool uses a different method to sort. You answer a series of questions to specify the type of shares or fund, performance criteria, cost parameters and so on. Then you can do more research on the shares, bonds or managed funds that meet your requirements. Morningstar (www.morningstar.com.au) offers some free tools, as does Standard & Poors (www.fundsinsights.com) for screening managed funds.

Charting Charting is a technique that plots the performance of shares over a specified time period, from months to decades and beyond. Looking at the one-year share chart for the Commonwealth Bank of Australia in Figure 3.3, it's obvious that charting can be tedious and expensive. But by going online, you can see the chart for a selected share in just seconds. With another click you can compare one company's price performance to that of other shares, industries, sectors or market indices, choosing the type of chart, time frame and indicators. Some sites provide free charts, but most require you to register as a client. This may necessitate paying a subscription to access the service, especially for graphing with advanced capabilities.

Share Quotes and Portfolio Tracking Almost every investment-oriented website includes share price quotation and portfolio tracking tools. Simply enter the share symbol to get the price, either in real-time or delayed several minutes. Once you create a portfolio of shares in a portfolio tracker, the tracker automatically updates your portfolio's value every time you check. You can usually link to more detailed information about each share. Many sites let you set up multiple portfolios. The features, quality and ease of use of share trackers varies, so check several to find the one that best meets your needs. Virtually all online brokers have portfolio trackers that are easy to set up and customise.

Using the Internet Effectively

The power of the Internet as an investing tool is alluring. 'Do-it-yourself' investing is now possible for the average investor, even novices who have never bought shares before. However, online investing also carries risks. Trading on the Internet requires that investors exercise the same—and possibly more—caution than they would if they were getting information from and placing orders with a human broker. You don't have the safety net of a live broker suggesting that you rethink your trade. The ease of point-and-click investing can be the financial downfall of inexperienced investors. Drawn by stories of others who have made lots of money, many novice investors take the plunge before they acquire the necessary skills and knowledge—often with disastrous results.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 3.3 **Price Chart for Commonwealth Bank of Australia (CBA)**

Specify the company's timeframe and frequency (daily, weekly, etc.), and the site will in seconds perform the tedious process of charting the selected share's price (in this case, the price of CBA) over the specified timeframe (in this case, the year ended October 2010).

ASX
Search ASX
go
Contact us FAQs Sitemap Glossary
Home Personal Investors Institutional Investors Companies Participants Information Providers Product Issuers About ASX
Products
Prices, Research & Announcements
Prices
Dividends
Announcements
Charting
Company research
Industry sectors
Market statistics
Education & Resources
Trading Services
Clearing & Settlement
ASX Compliance
About ASX Limited
Home > Prices, Research & Announcements > Charting
MyASX: Login Sign up
Detailed search - prices, announcements and charts
Print page
Shares Announcements Charts Company info Interest rate securities Options Warrants/Structured Products ASX Futures SFE Futures ASX CFDs
CBA, COMMONWEALTH BANK OF AUSTRALIA ORD
The chart of daily prices over 1 year for security CBA
CBA - Daily Line Chart [Close]
59.000
58.000
57.000
56.000
55.000
54.000
53.000
52.000
51.000
50.000
49.000
48.000
CBA - Volume
12000000
8000000
4000000
0
October Nov Dec 2010 Feb March April May June July August Sep October
Powered by HUBB Tools For Investors
ASX excludes all liability arising out of any inaccuracies in this Chart, except where liability is made non-excludable by legislation. Chart values may be adjusted for changes in a company's capital structure or to link historical values that represent the company's primary equity security.

(*Source:* Commonwealth Securities, <www.commsec.com.au>.)

Online or off, the basic rules for smart investing are the same. Know what you are buying, from whom and at what level of risk. Be sceptical. If it sounds too good to be true, it probably is! Always do your own research; don't accept someone else's word that a security is a good buy. Perform your own analysis before you buy, using the skills you will develop in later chapters of this book.

Here is some additional advice:

- Don't let the speed and ease of making transactions blind you to the realities of online trading. More frequent trades mean high total transaction costs. Although some brokers advertise per-trade costs as low as $15, the average online transaction fee is higher (about $30 for trades up to $3000 in October 2010). If you trade often, it will take longer to recoup your costs. Studies reveal that the more often you trade, the harder it is to beat the market. In addition, on short-term trades of less than one year, you'll pay taxes on profits at the higher, ordinary income rates, not the lower capital gains rate.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

- Don't believe everything you read on the Internet. It's easy to be impressed with a screen full of data touting a share's prospects or to act on a hot tip you find on a discussion board or in a chat room (more on these later). But what do you know about the person who posts the information? He or she could be a stooge for a dealer, posing as an enthusiastic investor to push the price up. Stick to the sites of major brokerage companies, managed funds, academic institutions and well-known business and finance publications.
- If you get bitten by the online buying bug, don't be tempted to use margin debt to increase your shareholdings. You may instead be magnifying your losses, as noted in Chapter 2.

We will return to the subject of online investment fraud and scams and will discuss guidelines for online transactions in subsequent sections of this chapter.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

3.1 Discuss the impact of the Internet on the individual investor, and summarise the types of resources it provides.

3.2 Identify the main types of online investment tools. How can they help you to become a better investor?

3.3 What are some of the pros and cons of using the Internet to choose and manage your investments?

Types and Sources of Investment Information

LG 2

As you learned in Chapter 1, becoming a successful investor starts with developing investment plans and meeting your liquidity needs. Once you have done this, you can search for the right investments to implement your investment plan and monitor your progress towards achieving your goals. Whether you use the Internet or print sources, you should examine various kinds of investment information to formulate expectations of the risk–return behaviours of potential investments and to monitor them once they are acquired. This section describes the key types and sources of investment information; the following section focuses on market averages and indices.

descriptive information factual data on the past behaviour of the economy, the market, the industry, the company or a given investment vehicle.

analytical information available current data in conjunction with projections and recommendations about potential investments.

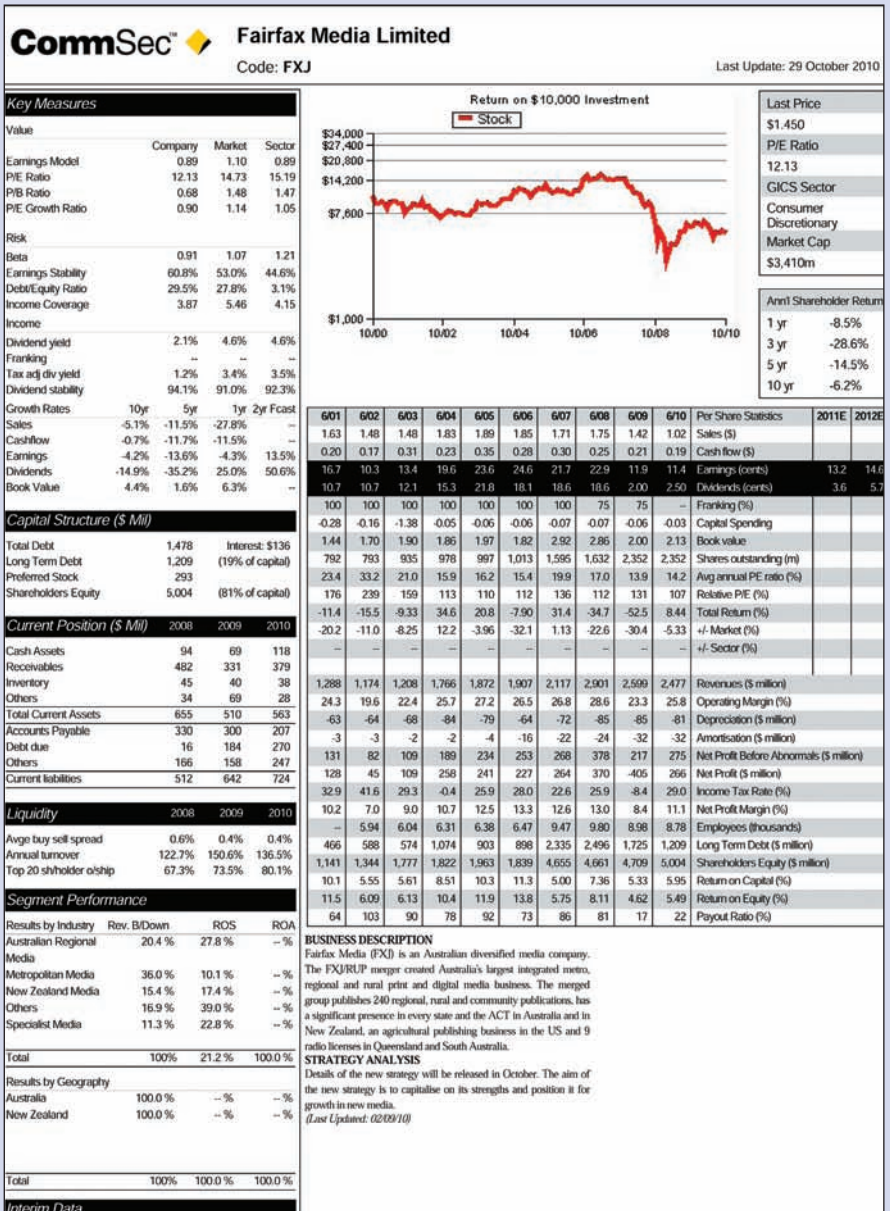
Investment information can be either descriptive or analytical. **Descriptive information** presents factual data on the past behaviour of the economy, the market, the industry, the company or a given investment vehicle. **Analytical information** presents available current data in conjunction with projections (forecasts) and recommendations about potential investments. A sample extract from a stockbroker's analysis of Fairfax Media Limited is shown in Figure 3.4. Examples of descriptive information are the company's past earnings and share prices. Examples of analytical information are projected earnings and dividends.

Some forms of investment information are free; others must be purchased individually or by annual subscription. Free information can be obtained from newspapers, magazines, the Internet and brokerage companies, and more can be found in public, university and brokerage company libraries. Alternatively, you can subscribe to services that provide periodic reports summarising the investment outlook and recommending certain actions. Such services cost money, but locating, reading and analysing free information all cost time. Thus, it is necessary to evaluate the worth of potential information: for example, paying $40 for information that increases your return

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 3.4 CommSec Report Containing Descriptive and Analytical Information

This report on Fairfax Media Limited at October 2010 contains both descriptive and analytical information.



CommSec

Fairfax Media Limited

Code: **FXJ**

Last Update: 29 October 2010

Key Measures

Value	Company	Market	Sector
Earnings Model	0.89	1.10	0.89
P/E Ratio	12.13	14.73	15.19
P/B Ratio	0.68	1.48	1.47
P/E Growth Ratio	0.90	1.14	1.05
Risk			
Beta	0.91	1.07	1.21
Earnings Stability	60.8%	53.0%	44.6%
Debt/Equity Ratio	29.5%	27.8%	3.1%
Income Coverage	3.87	5.46	4.15
Income			
Dividend yield	2.1%	4.6%	4.6%
Franking	--	--	--
Tax adj div yield	1.2%	3.4%	3.5%
Dividend stability	94.1%	91.0%	92.3%

Growth Rates	10yr	5yr	1yr	2yr Fcast
Sales	-5.1%	-11.5%	-27.8%	--
Cashflow	-0.7%	-11.7%	-11.5%	--
Earnings	-4.2%	-13.6%	-4.3%	13.5%
Dividends	-14.9%	-35.2%	25.0%	50.6%
Book Value	4.4%	1.6%	6.3%	--

Capital Structure ($ Mil)

Total Debt	1,478	Interest: $136
Long Term Debt	1,209	(19% of capital)
Preferred Stock	293	
Shareholders Equity	5,004	(81% of capital)

Current Position ($ Mil)	2008	2009	2010
Cash Assets	94	69	118
Receivables	482	331	379
Inventory	45	40	38
Others	34	69	28
Total Current Assets	655	510	563
Accounts Payable	330	300	207
Debt due	16	184	270
Others	166	158	247
Current liabilities	512	642	724

Liquidity	2008	2009	2010
Avge buy sell spread	0.6%	0.4%	0.4%
Annual turnover	122.7%	150.6%	136.5%
Top 20 sh/holder o/ship	67.3%	73.5%	80.1%

Segment Performance

Results by Industry	Rev. B/Down	ROS	ROA
Australian Regional Media	20.4 %	27.8 %	-- %
Metropolitan Media	36.0 %	10.1 %	-- %
New Zealand Media	15.4 %	17.4 %	-- %
Others	16.9 %	39.0 %	-- %
Specialist Media	11.3 %	22.8 %	-- %
Total	100%	21.2 %	100.0 %
Results by Geography			
Australia	100.0 %	-- %	-- %
New Zealand	100.0 %	-- %	-- %
Total	100%	100.0 %	100.0 %

Interim Data

Earnings per share (cents)

Period ending	1st Half	2nd Half	Full Year
2010-06-30	5.90	5.45	11.4
2009-06-30	9.64	2.22	11.9
Dividends per share (cents)			
2010-06-30	1.1	1.4	2.5
2009-06-30	2.0	--	2.0
Most recent dividend payment dates			
	Interim	Final	
Ex dividend date	01 March, 2010	03 September, 2010	
Div pay date	19 March, 2010	23 September, 2010	

Return on $10,000 Investment

Stock

$34,000
$27,400
$20,800
$14,200
$7,600
$1,000

10/00 10/02 10/04 10/06 10/08 10/10

Last Price
$1.450
P/E Ratio
12.13
GICS Sector
Consumer Discretionary
Market Cap
$3,410m

Ann'l Shareholder Return	
1 yr	-8.5%
3 yr	-28.6%
5 yr	-14.5%
10 yr	-6.2%

6/01	6/02	6/03	6/04	6/05	6/06	6/07	6/08	6/09	6/10	Per Share Statistics	2011E	2012E
1.63	1.48	1.48	1.83	1.89	1.85	1.71	1.75	1.42	1.02	Sales ($)		
0.20	0.17	0.31	0.23	0.35	0.28	0.30	0.25	0.21	0.19	Cash flow ($)		
16.7	10.3	13.4	19.6	23.6	24.6	21.7	22.9	11.9	11.4	Earnings (cents)	13.2	14.6
10.7	10.7	12.1	15.3	21.8	18.1	18.6	18.6	2.00	2.50	Dividends (cents)	3.6	5.7
100	100	100	100	100	100	100	75	75	--	Franking (%)		
-0.28	-0.16	-1.38	-0.05	-0.06	-0.06	-0.07	-0.07	-0.06	-0.03	Capital Spending		
1.44	1.70	1.90	1.86	1.97	1.82	2.92	2.86	2.00	2.13	Book value		
792	793	935	978	997	1,013	1,595	1,632	2,352	2,352	Shares outstanding (m)		
23.4	33.2	21.0	15.9	16.2	15.4	19.9	17.0	13.9	14.2	Avg annual PE ratio (%)		
176	239	159	113	110	112	136	112	131	107	Relative P/E (%)		
-11.4	-15.5	-9.33	34.6	20.8	-7.90	31.4	-34.7	-52.5	8.44	Total Return (%)		
-20.2	-11.0	-8.25	12.2	-3.96	-32.1	1.13	-22.6	-30.4	-5.33	+/- Market (%)		
--	--	--	--	--	--	--	--	--	--	+/- Sector (%)		
1,288	1,174	1,208	1,766	1,872	1,907	2,117	2,901	2,599	2,477	Revenues ($ million)		
24.3	19.6	22.4	25.7	27.2	26.5	26.8	28.6	23.3	25.8	Operating Margin (%)		
-63	-64	-68	-84	-79	-64	-72	-85	-85	-81	Depreciation ($ million)		
-3	-3	-2	-2	-4	-16	-22	-24	-32	-32	Amortisation ($ million)		
131	82	109	189	234	253	268	378	217	275	Net Profit Before Abnormals ($ million)		
128	45	109	258	241	227	264	370	-405	266	Net Profit ($ million)		
32.9	41.6	29.3	-0.4	25.9	28.0	22.6	25.9	-8.4	29.0	Income Tax Rate (%)		
10.2	7.0	9.0	10.7	12.5	13.3	12.6	13.0	8.4	11.1	Net Profit Margin (%)		
--	5.94	6.04	6.31	6.38	6.47	9.47	9.80	8.98	8.78	Employees (thousands)		
466	588	574	1,074	903	898	2,335	2,496	1,725	1,209	Long Term Debt ($ million)		
1,141	1,344	1,777	1,822	1,963	1,839	4,655	4,661	4,709	5,004	Shareholders Equity ($ million)		
10.1	5.55	5.61	8.51	10.3	11.3	5.00	7.36	5.33	5.95	Return on Capital (%)		
11.5	6.09	6.13	10.4	11.9	13.8	5.75	8.11	4.62	5.49	Return on Equity (%)		
64	103	90	78	92	73	86	81	17	22	Payout Ratio (%)		

BUSINESS DESCRIPTION

Fairfax Media (FXJ) is an Australian diversified media company. The FXJ/RUP merger created Australia's largest integrated metro, regional and rural print and digital media business. The merged group publishes 240 regional, rural and community publications, has a significant presence in every state and the ACT in Australia and in New Zealand, an agricultural publishing business in the US and 9 radio licenses in Queensland and South Australia.

STRATEGY ANALYSIS

Details of the new strategy will be released in October. The aim of the new strategy is to capitalise on its strengths and position it for growth in new media.

(Last Updated: 02/09/10)

Fairfax Media Limited
ABN: 008 663 161
Level 5 , 1 Darling Island Rd
Pyrmont, NSW 2009

Tel: (02) 9282 2833 Fax: (02) 9282 1633
Web: www.fxj.com.au
Dividend Reinvestment? Yes
Shareholder Discounts: No

Chairman: Roger Corbett,
MD: Brian McCarthy,
Investor relations name: Bruce Wolpe
Investor relations phone: (02) 9282 2833

© Copyright Huntleys' Investment Information Pty. Limited (HII) (a wholly owned subsidiary of Aspect Huntley Pty Limited) 2010. All rights reserved. Australian Financial Services Licence no. 240892. No material may be reproduced, except as allowed by the Copyright Act, without the prior written approval of HII. Some of the material provided by HII is copyright and is published under licence from ASX Operations Pty Limited ACN 004 523 782 ('ASXO'). Consensus forecast data is copyright Thomson Financial.

DISCLAIMER: While the above-mentioned advice and information are based on information, which HII consider reliable, its accuracy and completeness cannot be guaranteed. This report is made without consideration of any specific clients investment objectives, financial situation or particular needs. Those acting upon such information do so entirely at their own risk. For a copy of HII's Financial Services Guide, please go to http://www.aspecthuntley.com.au/FSG or phone HII on (02) 9256 8000 to request a copy.

(*Source:* Huntleys' Investment Information Pty Limited, as reproduced in CommSec's Company Wrap of Fairfax Media Limited.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

by $27 would not be economically sound. The larger your investment portfolio, the easier it is to justify information purchases, because their benefit can usually be applied to a number of investments.

Types of Information

Investment information can be divided into five types, each concerned with an important aspect of the investment process.

1. *Economic and current event information* includes background as well as forecast data related to economic, political and social trends, on a domestic as well as a global basis. Such information provides a basis for assessing the environment in which decisions are made.
2. *Industry and company information* includes background as well as forecast data on specific industries and companies. Investors use such information to assess the outlook in a given industry or specific company. Because of its company orientation, it is most relevant to share, bond or options investments.
3. *Information on alternative investment vehicles* includes background and predictive data for various forms of real estate and other tangible investments, as well as for securities other than shares, bonds and options (such as futures).
4. *Price information* includes current price quotations on certain investment vehicles, particularly securities. These quotations are commonly accompanied by statistics on the recent price behaviour of the vehicle.
5. *Information on personal investment strategies* includes recommendations on investment strategies or specific purchase or sale actions. In general, this information tends to be educational or analytical rather than descriptive.

Sources of Information

A complete listing of the sources of each type of investment information is beyond the scope of this book. Our discussion considers the most common sources of information on economic and current events, industries and companies, and prices, as well as other online sources.

Economic and Current Event Information It is clearly important for investors to stay abreast of major economic and current events. An awareness of events should translate into better investment decisions. Popular sources of economic and current event information include financial journals, general newspapers, institutional news, business periodicals, government publications and special subscription services. These are often available in both print and online versions; often the online versions are free but may have limited content.

Australian Financial Review
a daily business newspaper, published nationally; the most popular source of daily financial news.

Financial Journals The ***Australian Financial Review*** is the most popular source of financial news. It is published daily Monday to Saturday and is available throughout the country. In addition to giving daily price quotations on thousands of investment vehicles, it reports world, national, regional and corporate news. It regularly provides information that addresses personal finance issues and topics. Its online version (www.afr.com.au) is updated for each daily edition. Other regular financial journals include *Money* (www.money.ninemsn.com.au) and *Smart Investor* (www.afrsmartinvestor.com.au).

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

General Newspapers The major daily newspapers are another popular source of financial news. Each contains a daily 'business' section that provides relevant information for investors, and most have a regular 'money' or 'investing' section. All major newspapers contain share price quotations from the ASX and a summary of the major sharemarket averages and indices, both locally and for major international exchanges.

Institutional News The monthly economic letters of the nation's leading banks, such as ANZ and Westpac, provide useful economic information. To keep customers abreast of important news developments, most brokerage companies subscribe to a number of wire services such as Reuters, Bloomberg Financial Services, AP (Associated Press) and UPI (United Press International).

Business Periodicals Business periodicals vary in scope. Some present general business and economic articles, others cover securities markets and related topics, and still others focus solely on specific industries or property investments. Regardless of the subject matter, most business periodicals present descriptive information, and some also include analytical information. They rarely offer recommendations.

General business and economic articles are presented in the business sections of general-interest periodicals such as *Newsweek* (www.newsweek.com) and *Time* (www.time.com). A number of strictly business- and finance-oriented periodicals are also available. These include *Business Review Weekly* (www.brw.com.au), *Fortune* (http://money.cnn.com/magazines/fortune) and *Money* (http://money.cnn.com/magazines/moneymag).

Government Publications A number of government agencies publish economic data and reports useful to investors. The Reserve Bank of Australia's *Bulletin* provides articles and data on various aspects of economic and business activity (www.rba.gov.au/publications/bulletin). Reports issued by the Australian Bureau of Statistics (www.abs.gov.au) and the Department of Foreign Affairs and Trade (www.dfat.gov.au) can also provide data on economic activity and outlook.

Industry and Company Information Of special interest to investors is information on particular industries and companies. Often, after choosing an industry in which to invest, the investor will want to analyse specific companies. General articles related to the activities of specific industries can be found in trade publications relevant to that particular industry. More specific popular sources are discussed below.

shareholders' (annual) report a report published yearly by a public company; contains a wide range of information, including financial statements for the most recent period of operation.

Shareholders' Reports An excellent source of data on an individual company is the **shareholders'**, or **annual**, **report** published yearly by public companies. These reports contain a wide range of information, including financial statements for the most recent period of operation, along with summarised statements for several previous years. These reports are free and may be obtained from the companies themselves or from brokers. Highlights and a summary of financial results presented on page 2 of Wesfarmers Limited's 2010 Annual Report are shown in Figure 3.5. Wesfarmers Limited received an Australasian Reporting Awards gold award in recognition of the quality of its 2010 Annual Report. As can be seen from the page, Wesfarmers is able to quickly communicate key financial data to its stakeholders about its operations over the last two years.

Comparative Data Sources A number of useful sources of comparative data, typically broken down by industry and company size, are available for use in analysing the financial conditions of companies. Such information can be obtained, for a fee, from ASX Investor Services.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 3.5 Selected Information from an Annual Report

Wesfarmers Limited's Annual Report quickly acquaints the investor with key information on the company's operations over the last two years. It also provides historical data showing the trend in net profit over the last five years.

Highlights and summary

A strong performance with higher profits and increased dividends to shareholders

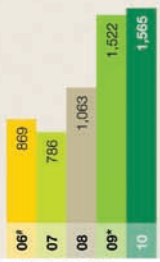
Results summary

		2010	2009
Key financial data			
Revenue	$m	**51,827**	50,982
Earnings before interest and tax*	$m	**2,869**	2,947
Net profit after tax (pre significant items)*	$m	**1,702**	1,628
Net profit after tax*	$m	**1,565**	1,522
Dividends	$m	**1,446**	1,102
Total assets*	$m	**39,236**	39,062
Net debt	$m	**4,035**	4,435
Shareholders' equity*	$m	**24,694**	24,248
Capital expenditure on property, plant and equipment and intangibles	$m	**1,656**	1,503
Depreciation and amortisation*	$m	**917**	856
Key share data			
Earnings per share*	cents	**135.7**	158.5
Dividends per share	cents	**125.0**	110.0
Net tangible assets per share*	$	**3.61**	3.13
Operating cash flow per share	$	**2.88**	3.25
Key ratios			
Return on average shareholders' equity*(R12)	%	**6.4**	7.3
Gearing (net debt to equity)	%	**16.3**	18.3
Interest cover (cash basis)	times	**6.8**	5.0

* 2009 restated for change in accounting policy for Stanwell royalty payment.

VALUE GENERATED AND DISTRIBUTED BY WESFARMERS

NET PROFIT AFTER TAX ($m)
$1,565



* Excludes earnings from the sale of AIG.
* Restated for change in accounting policy for Stanwell royalty payment.

2 WESFARMERS ANNUAL REPORT 2010

(*Source:* Reproduced from Wesfarmers Limited 2010 Annual Report p. 2, with kind permission from Wesfarmers Limited.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Subscription Services A variety of subscription services provide data on specific industries and companies. Today, many of these services are available on the Internet. Generally, a subscriber pays a basic fee that entitles him or her to information periodically published by the service. In addition to the basic service, you can purchase other services that provide information of greater depth or range. The main subscription services provide both descriptive and analytical information, but they generally don't make recommendations. Most investors, rather than subscribing to these services, gain access to them through their stockbrokers or a large public or university library. The websites for most services offer some free information and charge for the rest. Van Eck Research (www.vaneck.com.au) is an example of such a service.

Brokerage Reports Brokerage companies often make available to their clients reports from the various subscription services. They also provide clients with prospectuses for new security issues and back-office research reports. As noted in Chapter 2, a *prospectus* is a document that describes in detail the key aspects of the issue, the issuer, and its management and financial position. **Back-office research reports** include the brokerage company's analyses of and recommendations on prospects for the securities markets, specific industries or specific securities. Often a brokerage company publishes lists of securities classified by its research staff as either 'buy' or 'sell'. Brokerage research reports are available on request at no cost to existing and potential clients. A sample extract relating to Fairfax Media Limited was shown earlier in Figure 3.4.

back-office research reports
brokerage companies' analyses of and recommendations on investment prospects; made available on request at no cost to existing and potential clients.

Investment Letters **Investment letters** provide, on a subscription basis, the analyses, conclusions and recommendations of experts in securities investment. Some letters concentrate on specific types of securities, whereas others are concerned solely with assessing the economy or securities markets. Among the more popular investment letters are Huntleys' *Your Money Weekly Newsletter* (www.morningstar.com.au/Stocks/Huntleys) and *The Intelligent Investor* (www.intelligentinvestor.com.au). The more popular ones are generally issued monthly or weekly.

investment letters
newsletters that provide, on a subscription basis, the analyses, conclusions and recommendations of experts in securities investment.

Price Information Price information about various types of securities is contained in their **quotations**, which include current price data and statistics on recent price behaviour. Price quotations are readily available for actively traded securities. The most up-to-date quotations are generally available from real-time, online brokerage companies. Another automated quotation service is the *ticker*, a lighted screen on which share transactions made on the ASX and other markets are consolidated and reported as they occur. Pay TV subscribers in many areas can watch the ticker at the bottom of the screen on certain channels, including CNN and Bloomberg. Access to delayed or free price information is also available through a variety of online services.

quotations
price information about various types of securities, including current price data and statistics on recent price behaviour.

Investors can easily find the prior day's security price quotations in the published news media, both non-financial and financial. The major published source of security price quotations is the *Australian Financial Review*, which presents quotations for each previous business day's activities in all major markets. (Actual price quotations will be demonstrated and discussed as part of the coverage of specific investment vehicles in later chapters.)

Avoiding Online Scams

Just as the Internet increases the amount of information available to all investors, it also makes it easier for scam artists and others to spread false news and manipulate

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

GOOD TIP OR CYBERSCAM?— Investor bulletin boards on the Internet offer open forums in which investors can ask questions, offer advice, or simply read what others have written. Alas, with the push of a few keys, con artists can also reach a wide audience to peddle dubious shares and get-rich-quick schemes. Therefore, don't buy shares you haven't researched, and don't assume that people using the bulletin board have your best interests in mind. After all, as the editor of one investment magazine says, 'If you see a tip, it may be from one of the top brokers in the country, or it could be from an 11-year-old kid'.

information. Anyone can sound like an investment expert online, posting share tips with no underlying substance. You may not know the identity of the person touting or panning a share on the message boards. The person panning a share could be a disgruntled former employee or a short seller. For example, the ousted former chief executive of a US company, San Diego's Avanir Pharmaceuticals, posted negative remarks on message boards, adversely affecting the share price. The company sued and won a court order prohibiting him from ever posting derogatory statements about the company on any Internet message boards.

In the fast-paced online environment, two types of scams turn up frequently: 'pump-and-dump' schemes and get-rich-quick scams. In pump-and-dump schemes, promoters hype shares, quickly send the prices sky-high, and then dump them at inflated prices. In get-rich-quick scams, promoters sell worthless investments to naive buyers. One well-publicised pump-and-dump scheme demonstrates how easy it is to use the Internet to promote shares. The US Securities and Exchange Commission caught a 15-year-old boy who had made over $270 000 by promoting small-company shares. The self-taught young investor would buy a block of a company's shares and then send out a barrage of false and/or misleading email messages and message board postings singing the praises of that share and the company's prospects. Once this misinformation pushed up the share price, he sold and moved on to a new target company. Of course, cheating other investors by circulating incorrect or misleading information about a share is illegal and unethical. Both the ASX and the ASIC provide warnings to investors about the use of unauthorised information to make investment decisions. Regulators in all countries are actively working to remove such practices and prosecute offenders.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

3.4 Differentiate between descriptive information and analytical information. How might one logically assess whether the acquisition of investment information or advice is economically justified?

3.5 What popular financial business periodicals would you use to follow the financial news? General news? Business news? Would you prefer to get your news from print sources or online, and why?

3.6 Briefly describe the types of information that the following resources provide.

a. Shareholders' report
b. Comparative data sources

3.7 How would you access each of the following types of information, and how would the content help you to make investment decisions?

a. Prospectuses
b. Back-office research reports
c. Investment letters
d. Price quotations

3.8 Briefly describe several types of information that are especially well-suited to being made available on the Internet. What are the differences between the online and print versions, and when would you use each?

3.9 Using information in the text and the ASX and ASIC websites, describe some common types of online investment scams and hoaxes. How can you protect yourself from them?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Understanding Market Averages and Indices

LG 3

The investment information we have discussed helps investors to understand when the economy is moving up or down and how individual investments have performed. In addition, this and other information can be used to formulate expectations about future investment performance. It is also important to know whether market behaviour is favourable or unfavourable. The ability to interpret various market measures should help you to select and time investment actions.

A widely used way of assessing the behaviour of securities markets is to study the performance of market averages and indices. These measures allow you conveniently to (1) gauge general market conditions, (2) compare your portfolio's performance to that of a large, diversified (market) portfolio, and (3) study market cycles, trends and behaviours in order to forecast future market behaviour. Here we discuss key measures of share and bond market activity; in later chapters, we discuss averages and indices associated with other forms of investments. Like price quotations, these measures of market performance are available at many websites.

Sharemarket Averages and Indices

Sharemarket averages and indices are used to measure the general behaviour of share prices over time. Although the terms *average* and *indices* tend to be used interchangeably when people discuss market behaviour, technically they are different types of measures. **Averages** reflect the arithmetic average price behaviour of a representative group of shares at a given point in time. **Indices** measure the current price behaviour of a representative group of shares in relation to a base value set at an earlier point in time.

averages
numbers used to measure the general behaviour of share prices by reflecting the arithmetic average price behaviour of a representative group of shares at a given point in time.

indices
numbers used to measure the general behaviour of share prices by measuring the current price behaviour of a representative group of shares in relation to a base value set at an earlier point in time.

Averages and indices provide a convenient method of capturing the general mood of the market. They also can be compared at different points in time to assess the relative strength or weakness of the market. Current and recent values of the key averages and indices are quoted daily in the financial news, in most local newspapers, and on many radio and television news programs. Figure 3.6 provides the ASX's online, real-time summary of the main Australian sharemarket indices.

Internationally, the United States has the largest sharemarket. Its performance sets worldwide trends that are often followed in other markets, including Australia's. The calculation and reporting of both averages and indices are common in the United States, with two key US sharemarket measures being the Dow Jones Averages and the S&P indices. Indices are more widely used in Australia than averages. Let's look at the US measures first, then move on to consider ASX indices.

The Dow Jones Averages Dow Jones & Company, publisher of the *Wall Street Journal,* prepares four share averages for the New York Stock Exchange. They are calculated for a number of different industries and groups of companies based on size. The most popular is the **Dow Jones Industrial Average (DJIA)**, which is made up of 30 shares selected for total market value and broad public ownership. The group consists of high-quality industrial shares whose behaviours are believed to reflect overall market activity.

Dow Jones Industrial Average (DJIA)
a NYSE sharemarket average made up of 30 high-quality industrial shares selected for total market value and broad public ownership and believed to reflect overall market activity.

The value of the DJIA is calculated each business day by substituting the *closing share prices* of each of the 30 shares in the average into the following equation:

$$\text{DJIA} = \frac{\text{Closing price of share 1} + \text{Closing price of share 2} + \ldots + \text{Closing price of share 30}}{\text{DJIA divisor}}$$

Equation 3.1

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 3.6 **Major Sharemarket Indices**

The ASX's online, real-time report shows the real-time value of key Australian indices along with the change since the previous day's closing values.

Real time indices

Refresh indices as at Thu October 28 2010 01:09PM Sydney

	Index name	ASX code	Last	Mvmt	Close
^	S&P/ASX 20	XTL	2,822.0	30.1	2,791.9
^	S&P/ASX 50	XFL	4,679.5	45.4	4,634.1
^	S&P/ASX 100	XTO	3,821.1	35.7	3,785.4
^	S&P/ASX 200	XJO	4,690.9	42.8	4,648.1
v	S&P/ASX 200 2 x Daily Inverse Index	XNV	404.0	-7.4	411.4
^	S&P/ASX 200 2 x Daily Leverage Index	XLD	950.7	17.1	933.6
^	S&P/ASX 300	XKO	4,694.9	41.7	4,653.2
^	ALL ORDINARIES	XAO	4,758.3	37.8	4,720.5
^	S&P/ASX MIDCAP 50	XMD	4,247.5	27.4	4,220.1
^	S&P/ASX SMALL ORDINARIES	XSO	2,702.6	11.5	2,691.1
^	S&P/ASX All Australian 50	XAF	4,667.1	44.9	4,622.2
^	S&P/ASX All Australian 200	XAT	4,693.8	42.6	4,651.2
^	S&P/ASX200 A-REIT (Sector)	XPJ	864.9	14.9	850.0
^	S&P/ASX 200 Consumer Discretionary (Sector)	XDJ	1,561.5	7.6	1,553.9
^	S&P/ASX 200 Consumer Staples (Sector)	XSJ	8,159.8	43.0	8,116.8
^	S&P/ASX Dividend Opportunities Index	XDI	1,597.7	7.5	1,590.2
v	S&P/ASX Emerging Companies Index	XEC	1,724.5	-4.9	1,729.4
^	S&P/ASX 200 Energy (Sector)	XEJ	15,344.9	85.7	15,259.2
^	S&P/ASX 200 Financials (Sector)	XFJ	4,453.8	61.9	4,391.9
^	S&P/ASX 200 Financial-x-A-REIT (Sector)	XXJ	5,162.7	68.5	5,094.2
v	S&P/ASX All Ordinaries Gold (Sub Industry)	XGD	7,596.3	-2.4	7,598.7
^	S&P/ASX 200 Health Care (Sector)	XHJ	8,226.0	34.5	8,191.5
^	S&P/ASX 200 Industrials (Sector)	XNJ	3,775.3	12.8	3,762.5
^	S&P/ASX 200 Information Technology (Sector)	XIJ	615.8	6.4	609.4
^	S&P/ASX 200 Materials (Sector)	XMJ	13,133.8	98.1	13,035.7
^	S&P/ASX 300 Metals and Mining (Industry)	XMM	4,759.1	37.6	4,721.5
^	S&P/ASX 200 RESOURCES	XJR	5,518.3	43.6	5,474.7
^	S&P/ASX 200 Telecommunication Services (Sector)	XTJ	929.2	6.1	923.1
^	S&P/ASX 200 Utilities (Sector)	XUJ	4,560.1	33.3	4,526.8

(*Source:* Australian Securities Exchange, 28 October 2010, <ww.asx.com.au>. © ASX Limited ABN 98 008 624 691 (ASX) 2011. All rights reserved. This material is reproduced with the permission of ASX. This material should not be reproduced, stored in a retrieval system or transmitted in any form whether in whole or in part without the prior written permission of ASX.)

The value of the DJIA is merely the sum of the closing share prices of the 30 shares included in it, divided by a 'divisor'. For example, on 26 August 2009, the sum of the closing prices of the 30 industrials was 1262.79, which, when divided by the divisor of 0.1323 (rounded), resulted in a DJIA value of 9543.52. The purpose of the divisor is to

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

adjust for any share splits, company changes or other events that have occurred over time, thereby allowing the DJIA to be used to make time-series comparisons. Because the DJIA results from summing the prices of the 30 shares, higher-priced shares tend to affect the index more than do lower-priced shares. For example, a 5% change in the price of a $50 share (that is, $2.50) has less impact on the index than a 5% change in a $100 share (that is, $5). In spite of this and other criticisms levelled against the DJIA, it remains the most widely cited US sharemarket indicator.

Standard & Poor's Indices Standard & Poor's Corporation, a leading financial publisher, publishes six major US share indices covering various industries and companies of certain size. One often-cited S&P index is the 500 share composite index. Unlike the Dow Jones averages, **Standard & Poor's indices** are true indices. They are calculated each business day by substituting the *closing market value of each share* (closing price × number of shares outstanding) into the following equation:

Standard & Poor's indices true indices that measure the current price of a group of US shares relative to a base having an index value of 10.

Equation 3.2

$$\text{S\&P Index} = \frac{\text{Current closing market value of share 1} + \text{Current closing market value of share 2} + \ldots + \text{Current closing market value of the last share}}{\text{Base period closing market value of share 1} + \text{Base period closing market value of share 2} + \ldots + \text{Base period closing market value of the last share}} \times 10$$

The value of the S&P Index is found by dividing the sum of the market values of all shares included in the index by the market value of the shares in the base period and then multiplying the resulting quotient by 10, the base value of the S&P indices. Most indices are calculated in a similar fashion; the main differences lie in the shares included in the index, the base period and the base value of the index. For example, on 26 August 2009, the ratio of the closing market values of the S&P 500 composite shares to the 1941–1943 base-period closing market values was 102.812, which when multiplied by the base value of the S&P index of 10 results in an index value of 1028.12.

Certain of the S&P indices contain many more shares than the Dow averages do, and all of them are based on *market values* rather than *share prices*. Therefore, many investors feel that the S&P indices provide a more broadly based and representative measure of general US market conditions than do the Dow averages. Although some technical calculation problems exist with these indices, they are widely used—frequently as a basis for estimating the 'market return', an important concept that will be introduced in Chapter 4.

Like the Dow averages, the S&P indices are meaningful only when compared to values in other time periods or the 1941–1943 base-period value of 10.

ASX Indices There are a number of indices available to measure performance of the overall Australian sharemarket and its various segments. From Figure 3.6 it can be seen that indices are produced for various industries, including financials, energy, telecommunications and resources. In addition, indices are calculated for groups of large (ASX top 20, 50, 100, 200, etc.), medium (e.g. Mid Cap 50) and small (e.g. Small Ordinaries) companies. Each can provide useful information for investors who are considering the performance of certain market groups. Indices are also available for performance of *share prices only* and for performance of *total return* (share price and dividends). These

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

latter indices are known as *accumulation indices*. The indices are all calculated in a similar fashion, but using different groups of shares, as applicable for the index.

All Ordinaries Share Price Index
an index that measures the current prices of the top 500 shares relative to a base having an index value of 500.

The **All Ordinaries Share Price Index**, also referred to as the 'All Ords', is the oldest and broadest measure of the Australian sharemarket's average performance at any point in time. The All Ords is calculated on the top 500 companies, based on total market value, and includes more than 95% of the market's total value. However, because managed funds and other large institutional investors require a portfolio benchmark and index characterised by shares of sufficient size and liquidity, the ASX 200 was introduced in 2000 as the new primary gauge of the Australian equity market. The ASX 200 contains the 200 largest companies on the exchange and so covers all of the 'large cap' and 'mid cap' shares on the exchange. On 31 December 2009, the ASX 200 shares had an adjusted market cap in excess of $1.1 trillion, accounting for more than three-quarters of total market capitalisation. Of these ASX 200 shares, BHP Billiton Ltd had the largest market cap of $144.7 billion, the average market cap was $5.66 billion, the median (or middle) shares had a market cap of $1.35 billion, and the smallest ASX 200 shares had a market cap of only $240 million.

It is important to understand the workings of the Australian indices. The All Ords was established in January 1980 with a base value of 500 points. By 28 October 2010 the index stood at 4758.3 points, meaning that the value of the shares in the index have increased over 9.5 times since its inception. The index is calculated each business day by substituting that day's *closing market value of each share* (closing price × number of shares outstanding) and the *opening market value of each share* (opening price × number of shares outstanding) into the following equation:

Equation 3.3

$$\text{All Ords Index} = \frac{\text{Closing market value of share 1} + \ldots + \text{Closing market value of the last share}}{\text{Opening market value of share 1} + \ldots + \text{Opening market value of the last share}} \times \text{Index at the start of the day (from the previous day)}$$

For example:

Start of Day	Number of Shares	Share Price	Market Value
Company 1	80 000	× $2.75	= $220 000
Company 2	30 000	× $4.65	= $139 500
Company 3	45 000	× $8.20	= $369 000
Total			$728 500

Index at the start of the day (from the previous day) = 3056.2 points.

End of Day	Number of Shares	Share Price	Market Value
Company 1	80 000	× $2.85	= $228 000
Company 2	30 000	× $4.90	= $147 000
Company 3	45 000	× $8.05	= $362 250
Total			$737 250

Index at end of the day = $737 250 – $728 500 × 3056.2 = 3092.9 points.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Investors should be careful when using indices (or averages), as they can be deceptive! If the index rises, it doesn't necessarily mean that every share rose in value on that particular day. Some obviously must have, but some probably fell as well, as in the case of Company 3 in the above example.

Bond Market Indicators

Unlike the US market, which has Dow Jones bond averages, the Australian bond market has no formal bond index for various types of bonds. The best indicator of bond performance is the yield.

bond yield
summary measure of the total return an investor would receive on a bond if it were purchased at its current price and held to maturity; reported as an annual rate of return.

Bond Yields A **bond yield** is a summary measure of the total return an investor would receive on a bond if it were purchased at its current price and held to maturity. Bond yields are reported as annual rates of return. For example, a bond with a yield of 8.5% will provide its owner with a total return from periodic interest and capital gain (or loss) that would be equivalent to an 8.5% annual rate of earnings on the amount invested, if the bond were purchased at its current price and held to maturity.

Typically, bond yields are quoted for a group of bonds that are similar with respect to type and quality. They are published daily in the financial press. Like sharemarket indices, bond yield data are especially useful when viewed over time.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

3.10 Describe the basic philosophy and use of sharemarket *indices*. Explain how the behaviour of an index can be used to classify general market conditions as bull or bear.

3.11 Name three main sharemarket indices used in Australia. On what basis are shares chosen to be included in each index?

3.12 Briefly describe the calculation of the ASX All Ordinaries Share Price Index. Why should investors be careful when using indices?

3.13 Discuss bond yields as they are related to assessing bond market conditions.

Making Securities Transactions

LG4 LG5

Understanding how the securities markets are structured, how they function and their global dimension is only the first step in developing a sound investment program. You must also understand the procedures required to make transactions. In this section we will look at the role of stockbrokers, the basic types of orders that can be placed, the costs of making investment transactions, and investor protection.

The Role of Stockbrokers

stockbrokers
individuals licensed by ASIC to facilitate transactions between buyers and sellers of securities.

Trading on the ASX is carried out by **stockbrokers** (or brokerage companies known officially as *participating organisations*) who are licensed by the Australian Securities and Investments Commission under Chapter 7 of the Australian *Corporations Act 2001*. Employees of a stockbroker do not need to be separately licensed, but the licence holder must ensure that its staff are appropriately trained and supervised. There are currently more than 80 brokerage companies in Australia. Stockbrokers act as intermediaries between buyers and sellers of securities. The trading of securities is usually carried out in a matter of minutes with the use of sophisticated telecommunications networks. As noted earlier, personal computers and the Internet have opened up new

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

TOO MUCH PAPERWORK—Wasn't the computer supposed to cut down on paperwork? Tell that to the brokerage companies and fund managers that send you monthly and year-end statements, confirmations of buy and sell orders, newsletters and so on. What can you throw away? Nothing! Keep your brokerage statements and the year-end documents. Check over the monthly statements to make sure they're correct—and file them all to ensure that you have the necessary records to prepare your tax return.

ways of making securities transactions. Stockbrokers typically charge a commission for facilitating these securities transactions.

The Corporations Act and the ASX's Business Rules govern the activities of the exchange and its participating organisations, including stockbrokers. These require, among other things, that a stockbroker has appropriate qualifications, declares their interest in any securities that they recommend to their clients, keeps proper accounting records, maintains a trust account, and has all accounts audited and the auditor's report lodged with ASIC.

Brokerage Services The primary activity of stockbrokers involves executing clients' purchase and sale transactions at the best possible price. However, they can also offer clients a variety of other services. For example, the brokerage company normally provides free information about investments. Quite often, the company has a research staff that periodically issues analyses of economic, market, industry or company behaviour and makes recommendations to buy or sell certain securities. As a client of a large brokerage company, you can expect to receive regular bulletins on market activity and, possibly, a recommended investment list. You will also receive statements describing your transactions and showing commission and other charges, interest received, and details of amounts held on your behalf by the broker.

Today, most brokerage companies will invest surplus cash left in a customer's account in a money market fund, allowing the customer to earn a reasonable rate of interest on these balances. Such arrangements help the investor to earn as much as possible on temporarily idle funds.

Types of Brokerage Companies Just a few years ago, there were three distinct types of brokerage companies: full-service, discount and online. No longer are the lines between these categories clear-cut. Most brokerage companies, even the most traditional ones, now offer online services to compete with the increasingly popular online companies. And many discount brokers now offer services such as research reports for clients that were once available only from a full-service broker.

full-service broker
a broker that, in addition to executing clients' transactions, provides them with a full array of brokerage services.

discount broker
a broker that charges low commissions to make transactions for customers but provides little or no free research information or investment advice.

online broker
typically a deep-discount broker through which investors can execute trades online (also called an Internet or electronic broker).

The traditional broker, or so-called **full-service broker**, in addition to executing clients' transactions, offers investors a full array of brokerage services—providing investment advice and information, offering online brokerage services and extending margin loans. Investors who wish merely to make transactions and are not interested in taking advantage of other services should consider either a discount broker or an online broker.

Discount brokers focus primarily on making transactions for customers. They charge low commissions and provide little or no free research information or investment advice. The investor calls a toll-free number or visits the broker's website to initiate a transaction, and the discount broker confirms the transaction by phone, email or regular mail. Discount brokers that charge the lowest commissions and provide virtually no services are commonly referred to as *deep discounters*.

Online brokers, also called *Internet brokers* and *electronic brokers*, are typically deep-discount brokers through which investors can execute trades electronically online via a commercial service or on the Internet. The investor accesses the online broker's website to open an account, review the commission schedule or see a demonstration of the available transactional services and procedures. Confirmation of electronic trades can take mere seconds, and most trades occur within one minute. In response to the rapid growth of online investors, particularly among affluent young investors who enjoy surfing the Web, most brokerage companies now offer online trading.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The rapidly growing volume of business done by discount and online brokers attests to their success. Today, many banks and savings institutions are making discount and online brokerage services available to their depositors who wish to buy shares, bonds, managed funds and other investment vehicles. Some of the many online brokers are listed in Table 3.1.

TABLE 3.1 Some of the Many Online Brokers

Amscot Discount Stockbroking	First Prudential Markets
BellDirect	JB Were
CommSec	MacquarieEdge
DirectShares	NAB OnLine Trading
E*TRADE	Netwealth
E-Shares Corporation	Westpac Online Investing
EasyBroking	

ETHICS IN INVESTING

Did Martha Stewart Cross the Line?

On 5 March 2004 a jury returned a guilty verdict, convicting homemaking queen Martha Stewart and her former stockbroker, Peter Bacanovic, of obstructing justice and lying about a well-timed shares sale. According to the prosecution, Martha Stewart committed illegal insider trading when she sold shares in biotech company ImClone Systems and then made false statements to US federal investigators. The US Government also accused Stewart and Bacanovic of creating an alibi for Stewart's ImClone sales and attempting to obstruct justice during investigations into her trades. Stewart found herself tarred by the scandal, during which she resigned as chair of the board and CEO of her company. In addition, the share price of her company dropped more than 20%, and her holdings took nearly a US$200 million hit, wiping out more than a quarter of her net worth.

The US Government alleged that Bacanovic tipped off Stewart that two of his other clients, ImClone's CEO Samuel Waksal and Waksal's daughter, had just placed orders to sell their ImClone shares. Waksal, a long-time friend of Stewart, had obtained information that the US Food and Drug Administration (FDA) was about to reject ImClone's new cancer product, Erbitux. Stewart promptly sold all 3928 of her ImClone shares, thus avoiding about US$50 000 in losses. The very next day, ImClone announced that the FDA had rejected its application for Erbitux. Quickly, the price of ImClone shares dropped 16%, to US$46 per share. According to authorities, Stewart and Bacanovic fabricated an alibi for Stewart's trades—that she and her broker had decided earlier that she would sell if the price fell below US$60 per share.

As a result of the conviction, Martha Stewart spent five months in jail and another five months under house arrest. Interestingly, she was not convicted on the more serious charge of insider trading—which the judge dismissed—but rather for obstructing the federal investigation. By an ironic twist of fate, in February 2004 the drug at the heart of the scandal received FDA approval to treat certain forms of cancer.

Critical Thinking Question Does Martha Stewart, or any other investor, have the right to sell shares any time a broker advises him or her to?

Although her incarceration ended on 4 March 2005, and her house arrest was complete five months later, it was not until August 2006 that the US Securities and Exchange Commission announced that it had reached an agreement with Stewart on a settlement of the civil case against her. Under the settlement, Stewart agreed to a five-year ban from serving as a director, CEO or CFO, or in any officer role in which she would be responsible for preparing, auditing or disclosing the financial results of any public company. Thus, not until late 2011 will Stewart be eligible to again serve as the chairwoman, president and CEO of her own company.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Selecting a Stockbroker If you decide to start your investing activities with the assistance of either a full-service or discount stockbroker, select the person you believe best understands your investment goals. Choosing a broker whose disposition towards investing is similar to yours is the best way to establish a solid working relationship. Your broker should also make you aware of investment possibilities that are consistent with your objectives and attitude towards risk.

You should also consider the cost and types of services available from the company with which the broker is affiliated, to receive the best service at the lowest possible cost to you. The basic discount brokerage service is primarily transactional, and the online brokerage service is *purely* transactional. Contact with a broker, advice and research assistance generally are available only at a higher price. Investors must weigh the added commissions they pay a full-service broker against the value of the advice they receive, because the amount of available advice is the only major difference between online, discount and full-service brokers.

Referrals from friends or business associates are a good way to begin your search for a stockbroker. Don't forget to consider the investing style and goals of the person making the recommendation. However, it is not important—and often not even advisable—to know your stockbroker personally. And in this age of online brokers, you may never meet your broker face to face! A strictly business relationship eliminates the possibility that social concerns will interfere with the achievement of your investment goals. This does not mean that your broker's sole interest should be commissions. Responsible brokers do not engage in **churning**—that is, causing excessive trading of their clients' accounts in order to increase commissions. Churning is unethical; however, it is often difficult to prove.

churning
an illegal and unethical practice engaged in by a broker to increase commissions by causing excessive trading of clients' accounts.

Opening an Account To open an account, the customer must fill out various documents that establish a legal relationship between the customer and the brokerage company. A signature card and a personal data card provide the information needed to identify the client's account. The stockbroker must also have a reasonable understanding of a client's personal financial situation in order to assess his or her investment goals—and to be sure that the client can pay for the securities purchased. Instructions regarding the transfer and custody of securities must be given to the broker. If the customer is acting as a trustee or an executor or is a corporation, additional documents are required. Today, all of this can be done online with most brokerage companies.

No laws or rules prohibit an investor from having accounts with more than one stockbroker. Many investors establish accounts at different companies to obtain the benefit and opinions of a diverse group of brokers and to reduce the cost of making purchase and sale transactions.

A number of different types of accounts can be established with a stockbroker. You must select the type of account best suited to your needs. We will briefly consider three of the more popular types.

Single or Joint A brokerage account may be either single or joint. *Joint accounts* are most common between husband and wife or parent and child. The account of a minor (a person less than 18 years of age) is a **trustee account**, in which a parent or guardian must be part of all transactions. Regardless of which form of account is maintained, the name(s) of the account holder(s) and an account number are used to identify the account.

trustee account
the brokerage account of a minor; requires a parent or guardian to be part of all transactions.

cash account
a brokerage account in which a customer can make only cash transactions.

Cash A **cash account** is one in which the customer can make only cash transactions. Customers can initiate cash transactions via phone or online, and have three business

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

days in which to transmit the cash to the brokerage company. The company is likewise given three business days in which to deposit the proceeds from the sale of securities in the customer's cash account.

margin account
a brokerage account in which the customer has been extended borrowing privileges by the brokerage company.

Margin Account A **margin account** is an account in which the brokerage company extends borrowing privileges to a creditworthy customer. By leaving securities with the company as collateral, the customer can borrow a pre-specified proportion of the securities' purchase price. The brokerage company will, of course, charge the customer a stated rate of interest on borrowings. (The mechanics of margin trading are covered later in this chapter.)

Basic Types of Orders

Different types of orders are used in making security transactions. The type placed normally depends on the investor's goals and expectations. The three basic types of orders are the market order, the limit order and the stop-loss order.

market order
an order to buy or sell securities at the best price available when the order is placed.

Market Order An order to buy or sell securities at the best price available when the order is placed is known as a **market order**. It is generally the quickest way to have orders filled, because market orders are usually executed as soon as they are received by the dealer. Because of the speed with which market orders are executed, the buyer or seller of a security can be sure that the price at which the order is transacted will be very close to the market price prevailing at the time the order was placed.

limit order
an order to buy at or below a specified price, or to sell at or above a specified price.

Limit Order An order to buy at or below a specified price, or to sell at or above a specified price, is known as a **limit order**. When a limit order is placed, the broker transmits it to a specialist dealing in the security. The specialist makes a notation in his or her book, indicating the number of shares and price of the limit order. The order is executed as soon as the specified market price (or better) exists and all other orders with precedence—similar orders received earlier, buy orders at a higher specified price, or sell orders at a lower specified price—have been satisfied. The limit order can be placed as one of the following:

1. A *fill-or-kill order*, which if not immediately executed is cancelled.
2. *A day order*, which if not executed is automatically cancelled at the end of the day.
3. A *good-till-cancelled (GTC) order*, which generally remains in effect until executed or cancelled.

Assume, by way of example, that you place a limit order to buy 1000 shares of a particular company currently selling at $3.05 at a limit price of $3. Once the specialist has cleared all similar orders received before yours, and once the market price of the share has fallen to $3 or less, the order is executed. It is possible, of course, that your order might expire (if it is not a GTC order) before the share price drops to $3.

Although a limit order can be quite effective, it can also keep you from making a transaction. If, for instance, you wish to buy at $3 or less and the share price moves from its current $3.05 price to $4.20 while you are waiting, you have missed the opportunity to make a profit of $1.15 per share ($4.20 – $3.05). Had you placed a market order to buy at the best available price ($3.05), the profit of $1.15 would have been yours. Limit orders for the sale of a share are also disadvantageous when the share price closely approaches, but does not attain, the minimum sale price limit before dropping substantially. Generally speaking, limit orders are most effective when the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

price of a share is known to fluctuate greatly, because there is then a better chance that the order will be executed.

stop-loss (stop) order
an order to sell a share when its market price reaches or drops below a specified level; can also be used to buy shares when the market price reaches or rises above a specified level.

Stop-Loss Order An order to sell a share when its market price reaches or drops below a specified level is called a **stop-loss** or **stop order.** Stop-loss orders are *suspended orders* that are placed on shares and activated when and if a certain price is reached. The stop-loss order is placed on the stockbroker's book and becomes active once the stop price has been reached. Like limit orders, stop-loss orders are typically day or GTC orders. When activated, the stop order becomes *a market order* to sell the security at the best price available. Thus, it is possible for the actual price at which the sale is made to be well below the price at which the stop was initiated. These orders are used to protect investors against the adverse effects of a rapid decline in share price.

For example, assume you own 1000 shares of Ballarat Industries, which is currently selling for $3.50 per share. Because you believe the share price could decline rapidly at any time, you place a stop order to sell at $3. If the share price does in fact drop to $3, the broker will sell the 1000 shares at the best price available at that time. If the market price declines to $2.80 by the time your stop-loss order comes up, you will receive less than $3 per share. Of course, if the market price stays above $3 per share, you will have lost nothing as a result of placing the order, because the stop order will never be initiated. Often investors will raise the level of the stop order as the price of the share rises; such action helps to lock in a higher profit when the price is increasing.

Stop orders can also be placed to *buy a* share, although they are far less common than sell orders. For example, an investor may place a stop order to buy 1000 shares of MJ Enterprises, currently selling for $7 per share, once its price rises to, say, $7.50—the stop price. These orders are commonly used to buy a share just as its price begins to rise.

To avoid the risk of the market moving against you when your stop order becomes a market order, you can place *a stop-limit order*, rather than a plain stop order. This is an order to buy or sell shares at a given price or better once a stipulated stop price has been met. For example, in the Ballarat Industries example, had a stop-limit order been in effect, then when the market price of Ballarat dropped to $3, the broker would have entered a limit order to sell your 1000 shares at $3 a share *or better*. Thus, there would be no risk of getting less than $3 a share—*unless the price of the shares kept on falling*. In that case, as is true for any limit order, you might miss the market altogether and end up with shares worth much less than $3. Even though the stop order to sell was triggered (at $3), the shares will *not* be sold, with a limit order, if it keeps falling in price.

Online Transactions

The competition for your online business increases daily as more players enter an already crowded arena. However, low cost is not the only reason to choose a brokerage company. As with any financial decision, you must consider your needs and find the company that best matches them. One investor may want timely information, research and quick, reliable trades. Another, who is an active trader, will focus on cost and fast trades rather than research. Ease of site navigation is a major factor in finding an online broker. InfoChoice (www.infochoice.com.au) provides a service that compares the cost and services of online brokers. Use of such a service can make the choice much easier.

If you decide that do-it-yourself investing is for you, choose an online broker and open an account. In most cases, you can fill out the application forms online, print and

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

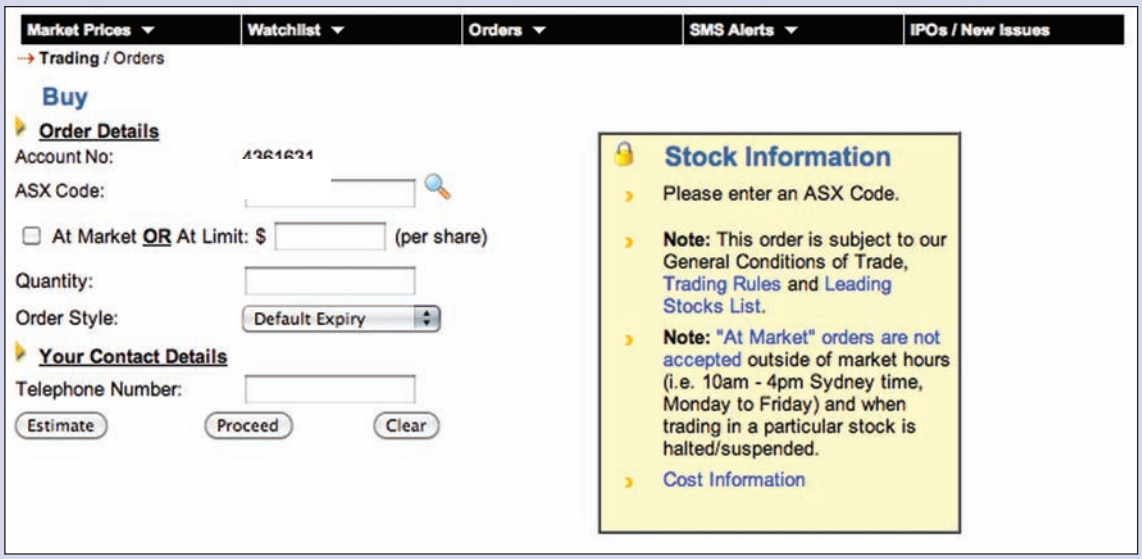
sign them, and mail them with a cheque to fund your account initially. As soon as you receive confirmation that the funds are in your account, you can start trading. You can place the same types of orders as with a traditional broker.

Here are the steps in making an online share purchase transaction at most websites. The specifics may vary slightly at other brokerage sites, but will follow a similar pattern.

1. Go to your brokerage company's website and log in with your account number and personal identification number (PIN) to access your account. This takes you to your personal trading home page.
2. At your personal trading page, you will have access to your account information, trade screens, market news, daily market summaries, share price quotes, research and more. If you have already done your research and know what share you wish to buy, you move on to the order page.
3. Using the brokerage site's order form, place your order. An example of the trading screen is shown in Figure 3.7.
4. After placing your securities order, click to see a preview or confirmation page to review your order before submitting it. If everything is correct, click 'Proceed'. Otherwise click 'Clear' to delete the order information.
5. Clicking on the 'Proceed' button takes you to the order-sent page that confirms receipt of your order. You can check the status of your order at the 'Buy/Sell/Order Status' link.

FIGURE 3.7 Order Ticket for an Online Broker

CommSec's order ticket makes it easy to place a long or short order and to specify the order type (market or limit). You must be a registered client in order to trade.



(*Source:* Commonwealth Securities, <www.commsec.com.au>.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

day trader
an investor who buys and sells shares quickly throughout the day in hopes of making quick profits.

Day Trading For some investors, online trading is so compelling that they become day traders. The opposite of buy-and-hold investors with a long-term perspective, **day traders** buy and sell shares quickly throughout the day. They hope that their shares will continue to rise in value for the very short time they own them—sometimes just seconds or minutes—so they can make quick profits. Some also sell short, looking for small price decreases. True day traders do not own any shares overnight—hence the term 'day trader'— because they believe that the extreme risk of prices changing radically from day to day will lead to large losses. Day trading is not illegal or unethical, but it is highly risky. To compound their risk, day traders usually buy on margin to use leverage to earn higher profits. However, as we saw in Chapter 2, margin trading also increases the risk of large losses.

Until recently, day trading was a little-known activity. Now that the Internet makes investment information and transactions accessible to the masses, it is a dangerously popular one. Day traders watch their computer screens continuously, trying to track numerous ticker quotes and price data to identify market trends. It's a very difficult task—essentially a very stressful, full-time job. Yet pitches for day trading make it seem like an easy route to quick riches. Quite the reverse is true. Day traders typically incur major financial losses when they start trading. Day traders also have high expenses for brokerage commissions, training and computer equipment. They must earn sizeable trading profits annually to break even on fees and commissions alone. Some never achieve profitability.

Tips for Successful Online Trades Successful online investors take additional precautions before submitting their orders. Here are some tips to protect yourself from common problems:

- *Know how to place and confirm your order before you begin trading.* This simple step can keep you from having problems later.
- *Verify the share symbol of the security you wish to buy.* Two very different companies can have similar symbols. Some investors have bought the wrong share because they didn't check before placing their order.
- *Use limit orders.* The order you see on your computer screen may not be the one you get. With a limit order, you avoid getting burned in fast moving markets. Although limit orders cost more, they can save you thousands of dollars.
- *Don't ignore the online reminders that ask you to check and recheck.* It's easy to make a typo that adds an extra digit to a purchase amount.
- *Don't get carried away.* It's easy to churn your own account. In fact, new online investors trade about twice as much as they did before they went online. To control impulse trading, have a strategy and stick to it.
- *Open accounts with two brokers.* This protects you if your online brokerage's computer system crashes. It also gives you an alternative if one brokerage is blocked with heavy trading volume.
- *Double-check orders for accuracy.* Make sure each trade was completed according to your instructions. It's very easy to make typos or use the wrong share symbol, so review the confirmation notice to verify that the right number of shares was bought or sold and that the price and commissions or fees are as quoted. Check your account for 'unauthorised' trades.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Transaction Costs

Making transactions through brokers or dealers is considerably easier for investors than it would be to negotiate directly, trying to find someone who wants to buy shares that you want to sell (or vice versa). To compensate the broker for executing the transaction, investors pay transaction costs, which are usually levied on both the purchase and the sale of securities. When making investment decisions, you must consider the structure and magnitude of transaction costs, because they affect returns.

Since 1984, brokers have been permitted to charge whatever commission they deem appropriate; however, the large number of brokers in the market forces fees to be competitive. Most companies have established **fixed-commission schedules** that apply to small transactions, the ones most often made by individual investors. On large institutional transactions, **negotiated commissions**—commissions mutually agreed on by the client and broker—are frequently used. Negotiated commissions are also available to individual investors who maintain sizeable accounts. The commission structure varies depending on the type of security and the type of broker. The basic commission structures for various types of securities are described in subsequent chapters.

fixed-commission schedules
fixed brokerage commissions that typically apply to small transactions.

negotiated commissions
brokerage commissions agreed on by the client and the broker as a result of their negotiations.

Obviously, discount brokers charge substantially less than full-service brokers for the same transaction. However, most discounters charge a minimum fee to discourage small orders. Further savings can be realised by using an online broker to make transactions electronically. Due to the competitive nature of the market, fees have been falling and are likely to continue to do so. The basic online brokerage service is purely transactional—contact with a broker, advice and research assistance generally can be obtained only at a higher price. Investors must weigh the added commissions they pay a full-service broker against the value of the advice they receive, because the amount of available advice is the only major difference among the discount, online and full-service broker.

Investor Protection

The integrity of the sharemarket is vital to investors, listed companies, stockbrokers, governments and the community at large. Lack of confidence in the market could discourage domestic investment and could result in loss of capital to foreign markets. As described earlier in this chapter, the ASX has a responsibility to provide efficient and competitive markets in securities, while ASIC has responsibility for regulating the conduct of those markets, so as to ensure that investors are protected and their confidence in the proper operation of the markets is retained. Together these organisations maintain rules that set high standards of behaviour for stockbrokers and listed companies in accordance with the *Corporations Act 2001*.

Market surveillance also plays an important role in encouraging market confidence by discouraging unscrupulous people from trying to profit dishonestly from the market (serious market abuse) at the expense of legitimate investors. In particular, market surveillance activities attempt to ensure that there is continuous disclosure of relevant information by listed companies, that trading rules are complied with, and that market manipulation does not occur. The risk of potential detection is often enough to inhibit such activities before they occur. In the event that illegal activity has occurred, appropriate legal action is taken.

Securities Exchanges Guarantee Corporation
a subsidiary of the ASX responsible for administering the National Guarantee Fund (NGF) to protect investors in the event of financial loss when using an ASX stockbroker.

A National Guarantee Fund (NGF) has been established to provide additional protection for investors. It ensures the reimbursement of a financial loss incurred by an investor as a result of certain defaults by an ASX stockbroker acting on their behalf. The NGF is administered by a subsidiary of the ASX, the **Securities Exchanges Guarantee Corporation**. For transactions which are required to be reported by the stockbroker to the ASX, the NGF guarantees the completion of sales and purchases of

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

'quoted securities' entered into by a stockbroker on the ASX's equity (and debt) market. In certain circumstances, the NGF may also be able to compensate for losses caused by unauthorised transfers, the stockbroker's incorrect cancellation of a certificate of title to quoted securities or failure to so cancel, or insolvency of the stockbroker when the stockbroker fails to meet its obligations to a person who had previously entrusted property to the stockbroker. The NGF legislation also details certain limitations on claims against the Fund, including a limit on the amount payable in some situations and time limits on lodging claims.

The NGF provides some protection in certain situations, but what happens if your stockbroker gave you bad advice or made an administrative mistake that resulted in a loss on your investment? Or what if you feel your broker is churning your account, the difficult-to-prove act of causing excessive trading in order to increase commissions? The NGF was not established to compensate for such events. Instead, if you have a dispute with your stockbroker, the first thing you should do is discuss the situation with a senior manager of the company and try to resolve the issue.

If you still don't get any satisfaction, you can use litigation (legal action) to resolve the dispute. Alternative dispute resolution processes that may avoid litigation include conciliation (mediation) and arbitration. **Conciliation** is an informal, voluntary approach in which you and the stockbroker agree to a *conciliator (mediator)* who facilitates negotiations between the two of you to resolve the case. The conciliator acts only as a facilitator and doesn't impose a solution on either party. Conciliation can reduce costs and time for both investors and stockbrokers in such situations. If conciliation isn't pursued, or if it fails, you may have no choice but to take the case to **arbitration**. This is a formal process whereby you and your stockbroker present the two sides of the argument before an *arbitrator (or arbitration panel)* who will decide the case. The Financial Ombudsman Service (FOS) is an industry ombudsman that provides an investigation, negotiation and conciliation service at no charge to the public. It has been established to deal with certain complaints against stockbrokers, but also against others in the finance industry, including fund managers, financial planners, securities dealers and life insurance companies. If necessary, the FOS can arbitrate on disputes and award compensation for actual financial losses incurred. The decisions are binding on the finance professional but not binding on complainants, and they are free to reject an award and begin legal action if they wish.

conciliation (mediation)
an informal, voluntary dispute resolution process in which a customer and a stockbroker agree to a conciliator (mediator), who facilitates negotiations between them in an attempt to resolve the case.

arbitration
a formal dispute resolution process in which a customer and a stockbroker present their argument before an arbitrator (or arbitration panel), who then decides the case.

Probably the best thing you can do to avoid the need to conciliate, arbitrate or litigate with your stockbroker is (1) use care when selecting a stockbroker, (2) understand the financial risks involved in their recommendations, (3) carefully evaluate the advice they offer, and (4) continuously monitor the volume of transactions that they recommend and execute. Clearly, it is much less costly to choose the right stockbroker initially than to later incur the financial and emotional costs of having chosen a bad one.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

3.14 Describe the types of services offered by brokerage companies, and discuss the criteria for selecting a suitable stockbroker.

3.15 Briefly differentiate among the following types of brokerage accounts:

a. Single or joint
b. Trustee
c. Cash
d. Margin

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

3.16 Differentiate among a *market order*, a *limit order* and a *stop-loss order*. What is the rationale for using a stop-loss order rather than a limit order?

3.17 In what two ways are commissions typically charged by brokers for executing their clients' transactions? Differentiate between the services and costs associated with full-service, discount and online brokers.

3.18 Summarise the steps you would take to make an online share transaction. What is *day trading*, and why is it risky?

3.19 How can you avoid problems as an online trader?

3.20 What protection does the National Guarantee Fund (NGF) provide securities investors?

3.21 How are conciliation and arbitration procedures used to settle disputes between investors and stockbrokers?

Investment Advisers and Investment Clubs

LG 6

investment adviser individual or company that provides investment advice, typically for a fee.

Although financial information is available from numerous sources, many investors have neither the time nor the expertise to analyse it and make decisions on their own. Instead, they turn to an **investment adviser**, which is an individual or company that provides investment advice, typically for a fee. Alternatively, some small investors join investment clubs. Here we will discuss using an investment adviser and then briefly cover the key aspects of investment clubs.

Using an Investment Adviser

The 'product' provided by an investment adviser ranges from broad, general advice to detailed, specific analyses and recommendations. The most general form of advice is a newsletter published by the adviser. These letters comment on the economy, current events, market behaviour and specific securities. Investment advisers also provide complete individualised investment evaluation, recommendation and management services. You can also find financial advice online. Many of the sites mentioned earlier in this chapter provide this information.

Regulation of Advisers As pointed out in Chapter 2, the *Corporations Act 2001* requires that anyone trading in securities and/or who gives investment advice is licensed. They must comply with requirements designed to protect clients. However, solicitors and accountants in public practice who provide investment advice *incidentally to their main professional activity* are not presently regulated by the Act.

Be aware that laws regulating the activities of professional investment advisers *do not guarantee competence*. Rather, they are intended to protect the investor against fraudulent and unethical practices. Advisers possessing a professional designation are usually preferred, because they have completed academic courses in areas directly or peripherally related to the investment process. Such designations include CPA (Certified Practising Accountant), CA (Chartered Accountant), CFP (Certified Financial Planner) and ASIA (Associate of the Securities Institute of Australia).

The Cost and Use of Investment Advice Professional investment advice typically costs a percentage of the amount of money being managed. These fees generally cover complete management of a client's money, excluding any purchase or sale commissions. The cost of periodic investment advice not provided as part of a subscription service could be based on a fixed-fee schedule or quoted as an hourly charge for consultation.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Some investment advisory services are better than others. More expensive services don't necessarily provide better advice. It's best to study carefully the track record and overall reputation of an investment adviser before purchasing their services. Not only should the adviser have a good performance record, but they should also be responsive to the investor's personal goals.

How good is the advice from online advisers? It's very hard to judge. Their suggested plans are only as good as the input. Beginning investors may not have sufficient knowledge to make wise assumptions on future savings, tax or inflation rates, or to analyse results thoroughly. A good personal financial planner will ask a lot of questions to assess your investing expertise and explain what you don't know. These automated tools may take too narrow a focus and not consider other parts of your investment portfolio. For many investors, online advisers lack what leads them to get help in the first place—the human touch. They want hand-holding, reassurance and gentle nudging to follow through on their plans.

Investment Clubs

investment club
a legal partnership through which a group of investors are bound to a specified organisational structure, operating procedures and purpose, which is typically to earn favourable long-term returns from moderate-risk investments.

Another way to obtain investment advice and experience is to join an investment club. This route can be especially useful for those of moderate means who do not want to incur the cost of an investment adviser. An **investment club** is a legal partnership binding a group of investors (partners) to a specified organisational structure, operating procedures and purpose. The goal of most clubs is to earn favourable long-term returns by making investments in vehicles of moderate risk.

Individuals with similar goals usually form investment clubs to pool their knowledge and money to create a jointly owned and managed portfolio. Certain members are responsible for obtaining and analysing data on a specific investment vehicle or strategy. At periodic meetings, the members present their findings and recommendations for discussion and further analysis by the membership. The group decides whether to pursue the proposed vehicle or strategy. Most clubs require members to make scheduled contributions to the club's treasury, thereby regularly increasing the pool of investable funds. Although most clubs concentrate on investments in shares and bonds, some may concentrate on specialised investments such as options or futures.

Membership in an investment club provides an excellent way for the novice investor to learn the key aspects of portfolio construction and investment management, while (one hopes) earning a favourable return on his or her funds. In fact, many investment clubs regularly earn returns above the market and even above professional money managers. The reason? Investment clubs typically buy shares for the long term, rather than trying to make a quick buck.

As you might expect, investment clubs have also joined the online investing movement. By tapping into the Internet, clubs are freed from geographical restrictions. Now investors around the world, many who have never met, can form a club and discuss investing strategies and share picks just as easily as if they gathered in person. Finding a time or place to meet is no longer an issue. Some clubs are formed by friends; others are strangers who have similar investing philosophies and may have met online. Online clubs conduct business via email or set up a private website.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

3.22 Describe the services that professional investment advisers perform, how they are regulated, online investment advisers and the cost of investment advice.

3.23 What benefits does an *investment club* offer the small investor? Why do investment clubs regularly outperform the market and the professionals? Would you prefer to join a regular or an online club, and why?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Discuss the growth in online investing, including educational sites and investment tools, and the effective use of the Internet. The Internet has empowered individual investors by providing information and tools formerly available only to investing professionals and by simplifying the investing process. The savings it provides in time and money are huge. Investors get the most current information, including real-time share price quotes, market activity data, research reports, educational articles and discussion forums. Tools such as financial planning calculators, share-screening programs, charting, price quotes and portfolio tracking are free at many sites. Buying and selling securities online is convenient, relatively simple, inexpensive and fast.

LG 2 Identify the main types and sources of traditional and online investment information. Investment information, descriptive or analytical, includes information about the economy and current events, industries and companies, and alternative investment vehicles, as well as price information and personal investment strategies. It can be obtained from financial journals, general newspapers, institutional news, business periodicals, government publications, special subscription services, shareholders' reports, comparative data sources, subscription services, brokerage reports, investment letters, price quotations, and electronic and online sources. Most print publications also have websites with access to all or part of their content. Because it is hard to know the qualifications of those who make postings on message boards, participants must do their own homework before acting on an online tip.

LG 3 Explain the characteristics, interpretation and uses of the commonly cited share and bond market averages and indices. Investors commonly rely on sharemarket averages and indices to stay abreast of market behaviour. The most often cited is the All Ordinaries Index. Also widely followed internationally is the US Dow Jones Industrial Average. Numerous other averages and indices, including a number of global and foreign market indices, are regularly published in the financial press.

Bond market indicators are most often reported in terms of average bond yields. A wealth of return and price index data is also available for various domestic and foreign markets. Both share and bond market statistics are published daily in the *Australian Financial Review* and regularly in other publications.

LG 4 Review the roles of traditional and online stockbrokers, including the services they provide, selection of a stockbroker, opening an account and transaction basics. Stockbrokers facilitate transactions among buyers and sellers of securities, and they provide a variety of other client services. An investor should select a stockbroker who has a compatible disposition towards investing and whose company offers the desired services at competitive costs. Today, the distinctions among traditional, discount and online brokers are blurring. Most brokers now offer online trading capabilities, and many no-frills brokers are expanding their services to include research and advice. Investors can open a variety of types of brokerage accounts, such as single, joint, trustee, cash and margin.

Key Terms

analytical information, *p. 55*
Australian Financial Review, *p. 57*
back-office research reports, *p. 60*
descriptive information, *p. 55*
investment letters, *p. 60*
quotations, *p. 60*
shareholders' (annual) report, *p. 58*

All Ordinaries Share Price Index, *p. 65*
averages, *p. 62*
bond yield, *p. 66*
Dow Jones Industrial Average (DJIA), *p. 62*
indices, *p. 62*
Standard & Poor's indices, *p. 64*

cash account, *p. 69*
churning, *p. 69*
discount broker, *p. 67*
full-service broker, *p. 67*
margin account, *p. 70*
online broker, *p. 67*
stockbrokers, *p. 66*
trustee account, *p. 69*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 5 Describe the basic types of orders (market, limit and stop-loss), online transactions, transaction costs, and the legal aspects of investor protection. A market order is an order to buy or sell shares at the best price available. A limit order is an order to buy at a specified price or below or to sell at a specified price or above. Stop-loss orders become market orders as soon as the minimum sell price or the maximum buy price is hit. Limit and stop-loss orders can be placed as fill-or-kill orders, day orders or good-till-cancelled (GTC) orders. On small transactions, most brokers have fixed-commission schedules; on larger transactions, they will negotiate commissions. Commissions also vary by type of security and type of broker: full-service, discount or online broker. The National Guarantee Fund (NGF) insures customers' accounts against the brokerage company's failure. To avoid litigation, mediation and arbitration procedures are frequently employed to resolve disputes between investor and broker. These disputes typically concern the investor's belief that the broker either gave bad advice or churned the account.	arbitration, *p. 75* conciliation (mediation), *p. 75* day trader, *p. 73* fixed commission schedules, *p. 74* limit order, *p. 70* market order, *p. 70* negotiated commissions, *p. 74* Securities Exchanges Guarantee Corporation, *p. 74* stop-loss (stop) order, *p. 71*
LG 6 Discuss the roles of investment advisers and investment clubs. There are a variety of different types of investment advisers. Websites that provide investment advice, such as retirement planning, asset diversification, and share and managed fund selection, are now available as well. Investment clubs provide individual investors with investment advice and help them to gain investing experience. Online clubs have members in various geographical areas and conduct business via email or at a private website.	investment adviser, *p. 76* investment club, *p. 77*

Discussion Questions

LG 2 **Q3.1** Thomas Weisel, chief executive of a securities company that bears his name, believes that individual investors already have too much information. 'Many lose money by trading excessively on stray data', he says. Other securities professionals argue that individual investors aren't really capable of interpreting much of the information now available to them. Explain why you agree or disagree with these opinions.

LG 2 **Q3.2** Innovative Internet-based bookseller Amazon.com has now expanded into other retail categories. Gather appropriate information from relevant sources to assess the following with an eye towards investing in Amazon.com.

- **a.** Economic conditions and the key current events during the past 12 months.
- **b.** Information on the status and growth (past and future) of the bookselling industry and specific information on Amazon.com and its main competitors.
- **c.** Brokerage reports and analysts' recommendations with respect to Amazon.com.
- **d.** A history of the past and recent dividends and price behaviour of Amazon.com, which is traded on the Nasdaq market.
- **e.** A recommendation with regard to the advisability of investing in Amazon.com.

LG 3 **Q3.3** Gather and evaluate relevant market averages and indices over the past six months to assess recent sharemarket conditions. Describe the conditions in these markets. Using recent history, coupled with relevant economic and current event data, forecast near-term market conditions. On the basis of your assessment of market conditions, would you recommend investing in shares at this time? Explain the reasoning underlying your recommendation.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG4 **Q3.4** Prepare a checklist of questions and issues you would use when shopping for a stockbroker. Describe both the ideal broker and the ideal brokerage company, given your investment goals and disposition. Discuss the pros and cons of using a full-service rather than a discount or online broker. If you plan to trade online, what additional questions would you ask?

LG4 **Q3.5** Visit the websites of two brokerages listed in Table 3.1 or any others you know. After exploring the sites, compare them for ease of use, quality of information, availability of investing tools, reliability, other services, and any other criteria important to you. Summarise your findings and explain which you would choose if you were to open an account, and why.

LG5 **Q3.6** Describe how, if at all, a conservative and an aggressive investor might use each of the following types of orders as part of their investment programs. Contrast these two types of investors in view of these preferences.

- **a.** Market
- **b.** Limit
- **c.** Stop-loss

LG5 **Q3.7** Search for sites providing information about day trading. On the basis of your research, summarise how day trading works, some strategies for day traders, the risks and the rewards. What type of person would make a good day trader?

LG6 **Q3.8** Differentiate between the financial advice you would receive from a traditional investment adviser and one of the new online planning and advice sites. Which would you personally prefer to use, and why? How could membership in an investment club serve as an alternative to a paid investment adviser?

Problems

All problems are available on **www.pearson.com.au/myfinancelab**

LG3 **P3.1** Bill Shaffer estimates that if he does 10 hours of research using data that will cost $75, there is a good chance that he can improve his expected return on a $10 000 one-year investment from 8% to 10%. Bill feels that he must earn at least $10 per hour on the time he devotes to his research.

- **a.** Find the cost of Bill's research.
- **b.** By how much (in dollars) will Bill's return increase as a result of the research?
- **c.** On a strict economic basis, should Bill perform the proposed research?

LG3 **P3.2** Imagine that the All Ordinaries Index (All Ords) is based on the prices of five shares. The opening and closing prices for each of the five shares in the All Ords are given in the following table.

		Share Price	
Share	No. of Shares	Closing	Opening
Ace Computers	10 000	$6.50	$7.40
Coburn Motor Company	26 000	3.70	3.40
National Soap & Cosmetics	18 000	11.00	9.60
Ronto Foods	31 000	7.30	7.20
Wings Aircraft	14 000	9.60	8.70

- **a.** Assuming the index had a value of 2946.2 at the end of the previous day, calculate the index's new value.
- **b.** Assuming the index had a value of 3427.1 a year ago, describe the apparent market behaviour over the last year. Was it a *bull* or a *bear* market?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG 3

P3.3 The All Suspicious Index (a fictitious index) is used by many investors to monitor the general behaviour of the sharemarket. It has a base value set equal to 100 at 1 January 1980. The closing market values for each of the six shares included in the index are given for three dates.

	Closing Market Value of Shares		
Share	30 June 2010 ('000)	1 January 2010 ('000)	1 January 1980 ('000)
1	$430	$460	$240
2	1150	1120	630
3	980	990	450
4	360	420	150
5	650	700	320
6	290	320	80

a. Calculate the value of the All Suspicious Index both on 1 January 2010 and on 30 June 2010, using the same methodology used to calculate the S&P indices and the data presented here.
b. Compare the values of the All Suspicious Index calculated in part **a** and relate them to the base index value. Would you describe the general market condition during the six-month period from 1 January to 30 June 2010 as a *bull* or a *bear* market?

LG 3

P3.4 Mamta Singh wishes to develop an average or index that can be used to measure the general behaviour of share prices over time. She has decided to include six closely followed, high-quality shares in the average or index. She plans to use 15 August 1978, her birthday, as the base and is interested in measuring the value of the average or index on 15 August 2001 and 15 August 2010. She has found the closing prices for each of the six shares, A to F, at each of the three dates and has calculated a divisor that can be used to adjust for any share splits, company changes and so on that have occurred since the base year, which has a divisor equal to 1.

	Closing Share Price		
Share	15 August 2010	15 August 2001	15 August 1978
A	$4.60	$4.00	$5.00
B	3.70	3.60	1.00
C	2.00	2.30	0.70
D	5.90	6.10	2.60
E	8.20	7.00	4.50
F	3.20	3.00	3.20
Divisor	0.70	0.72	1.00

Note: The number of shares outstanding has remained unchanged at each of the three dates. Therefore, the closing share prices will behave identically to the closing market values.

a. Using the data given in the table, calculate the market *average*, using the same methodology used to calculate the Dow averages, at each of the three dates—15 August 1978, 2001 and 2010.
b. Using the data given in the table and assuming a base index value of 10 on 15 August 1978, calculate the market *index*, using the same methodology used to calculate the S&P indices, at each of the three dates.
c. Use your findings in parts **a** and **b** to describe the general market condition—*bull* or *bear*—that existed between 15 August 2001 and 15 August 2010.
d. Calculate the percentage changes in the average and index values between 15 August 2001 and 15 August 2010. Why do they differ?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG3 **P3.5** Imagine that you have placed a *limit order* to buy 1000 shares of Sallisaw Tool at a price of $3.80, though the shares are currently selling for $4.10. Discuss the consequences, if any, of each of the following.

a. The share price drops to $3.90 per share two months before cancellation of the limit order.

b. The share price drops to $3.80 per share.

c. The minimum share price achieved before cancellation of the limit order was $3.85. When the limit order was cancelled, the share was selling for $4.75.

LG5 **P3.6** If you place a *stop-loss* order to sell at $2.30 on a share currently selling for $2.65 per share, what is likely to be the minimum loss you will experience on 500 shares if the share price rapidly declines to $2.05 per share? Explain. What if you had placed *a stop-limit* order to sell at $2.30, and the share price tumbled to $2.05?

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 3.1 A RICH UNCLE—THE MURPHYS' GOOD FORTUNE

LG2 LG4 LG6 Ron and Helen Murphy own a ten-pin bowling centre located in a New South Wales regional town. They enjoy running the business, which they have owned for nearly three years. Ron, a retired professional bowler, saved for nearly 10 years to buy this business, which he and his wife fully own. The income from the centre is adequate to allow Ron, Helen and their two children, Mary (age 10) and Michael (age four), to live comfortably. Although lacking formal education beyond Year 10, Ron has become an avid reader. He enjoys reading about current events and personal finance, particularly investing. He especially likes *Smart Investor* magazine, from which he has gained numerous ideas for better managing their finances. Because of the long hours required to run the business, Ron can devote three to four hours a day (on the job) to reading.

Recently, Ron and Helen were notified that Helen's uncle had died and left them a portfolio of shares and bonds with a current market value of $300 000. They were elated to learn of their good fortune but decided it would be best not to change their lifestyle as a result of this inheritance. Instead, they want their newfound wealth to provide for their children's private school education, as well as their own retirement. They decided that, like their uncle, they would keep these funds invested in shares and bonds. Ron felt that in view of this, he needed to acquaint himself with the securities currently in the portfolio. He knew that if he were to manage the portfolio himself, he would have to stay abreast of the securities markets as well as the economy in general. He also realised he would need to follow each security in the portfolio and continuously evaluate possible alternative securities that could be substituted as conditions warranted. Because Ron had plenty of time in which to follow the market, he strongly believed that, with proper information, he could manage the portfolio. Given the amount of money involved, Ron wasn't too concerned with the information costs; rather, he wanted the best information he could get at a reasonable price.

QUESTIONS

1. Explain what role the *Australian Financial Review*, *Smart Investor*, *Money* and other publications might play in meeting Ron's needs. What other general sources of economic and current event information would you recommend to Ron? Explain.
2. Explain to Ron the need to find a good stockbroker and the role the stockbroker could play in providing information and advice.
3. Describe the services and sources of investment advice available to Ron. Would you recommend that he hire an adviser to manage the portfolio? Explain the potential costs and benefits of such an alternative.
4. Give Ron a summary prescription for obtaining information and advice that will help to ensure the preservation and growth of the family's newfound wealth.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 3.2 PETER AND DEBORAH'S CHOICES OF BROKERS AND ADVISERS

LG4 LG5 LG6 Peter Chang and Deborah Barry, friends who work for a large software company, decided to leave the relative security of their employer and join the staff of Online Speed Limited, a two-year-old company working on new broadband technology for fast Internet access. Peter will be the director for new-product development; Deborah will be finance director. Although they are excited about the potential their new jobs offer, they recognise the need to consider the financial implications of the move. Of immediate concern is their superannuation funds. On leaving their current employer, each of them will receive a lump-sum settlement of about $75 000 that they may roll over into a self-managed fund or into their new employer's fund.

Peter is 30 years old and single, with a bachelor's degree in computer science. He rents a unit and would like to buy a townhouse fairly soon but is in no rush. For now, he is happy spending his money on the luxuries of life. He considers himself a bit of a risk taker and has dabbled in the sharemarket from time to time, using his technology expertise to invest in software and Internet companies. Deborah's undergraduate degree was in English, followed by an MBA in finance. She is 32, married, and hopes to start a family very soon. Her husband is a doctor in private practice.

Peter is very computer-savvy and likes to pick shares on the basis of his own Internet research. Although Deborah's finance background gives her a solid understanding of investing fundamentals, she is more conservative and has thus far stayed with blue-chip shares and managed funds. Among the topics that come up during their lunchtime conversation are stockbrokers and financial planners. Peter is leaning towards a bare-bones online broker with low cost per trade that is offering free trades for a limited time. Deborah is also cost-conscious but warns Peter that the low costs can be deceptive if you have to pay for other services or find yourself trading more often. She also thinks Peter is too focused on the technology sector and encourages him to seek financial advice to balance his portfolio. They agree to research a number of brokerage companies and investment advisers and meet again to compare notes.

QUESTIONS

1. Research at least four different full-service, discount and online stock brokerage companies, and compare the services and costs. What brokers would suit Peter's needs best, and why? What brokers would suit Deborah's needs best, and why? What are some key questions each should ask when interviewing potential brokers?
2. What factors should Peter and Deborah consider before deciding to use a particular broker? Compare the pros and cons of getting the personal attention of a full-service broker with the services provided by an online broker.
3. Do you think that a broker that offers *no* online trading but focuses on personal attention would be a good choice for either Peter or Deborah?
4. Peter mentioned to Deborah that he had read an article about *day trading* and wanted to try it. What would you advise Peter about the risks and rewards of this strategy?
5. Prepare a brief overview of the traditional and online sources of investment advice that could help Peter and Deborah create suitable portfolios. Which type of adviser would you recommend for Peter? For Deborah? Explain your reasoning.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Excel with Spreadsheets

Peter Tanaka is interested in starting a share portfolio. He has heard many financial reporters talk about the Dow Jones Industrial Average (DJIA) as being a proxy for the overall sharemarket. From visiting various online investment sites, Peter is able to track the variability in the Dow. Peter would like to develop an average or index that will measure the price performance of his selected portfolio over time. He has decided to create a price-weighted index, similar to the Dow, where the shares are held in proportion to their prices. He wishes to form an index based on the following 10 high-quality shares and has designated 13 October 1977 as the base year. The number of shares outstanding has remained constant over the period 1977–2011. The implication is that the closing share prices will behave just like the closing market values. Given the data below, **create a spreadsheet** to model and analyse the use of an index.

	Prices		
Shares	13/10/2011	13/10/2007	13/10/1977
A	45	50	55
B	12	9	15
C	37	37	37
D	65	66	67
E	36	42	48
F	26	35	43
G	75	68	59
H	35	38	30
I	67	74	81
J	84	88	92

Questions

1. The divisor is 1.00 on 13 October 1977, 0.75 on 13 October 2007 and 0.85 on 13 October 2011. Using this information and the data supplied above, calculate the market average, using the same methodology used to calculate the Dow averages, on each of the three dates—13 October 1977, 2007 and 2011.

2. The DJIA is the most widely cited sharemarket indicator, yet there are criticisms of the model. One criticism is that the higher-priced securities in the portfolio will impact the Dow more than the relatively lower-priced stocks. Assume that share J increases by 10%. Recalculate the market averages on each of the three dates.

3. Next, assume share J is back to its original level and share B increases by 10%. Recalculate the market averages on each of the three dates. Compare your findings in all three scenarios. Do you find support for the criticism of the Dow? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

One of the most important aspects of making an investment is having high-quality current information. To buy a share or a bond without adequate information about both the company and the financial asset is to set oneself up for possible financial loss. As this chapter has indicated, there are a multitude of sources of investment information on economic and current events, industries and companies, and prices of the market as a whole and of individual securities in particular. The World Wide Web allows free and immediate access to information previously available just to professionals or for a hefty fee. The following Web addresses take you to some locations where financial and qualitative data can be obtained on selected financial assets.

WEBSITE	URL
Bloomberg	www.bloomberg.com.au
InfoChoice	www.infochoice.com.au
Smart Investor	www.afrsmartinvestor.com.au
Yahoo!7 Finance	http://au.finance.yahoo.com

Visit **www.pearson.com.au/myfinancelab** for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

PART TWO

Important Conceptual Tools

4 Return and Risk

APPENDIX 4A The Time Value of Money

5 Modern Portfolio Concepts

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER

4 Return and Risk

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Review the concept of return, its importance, the forces that affect the investor's level of return, and historical returns.
- LG2 Discuss the role of time value of money in measuring return and defining a satisfactory investment.
- LG3 Describe real, risk-free and required returns, and the calculation and application of holding period return yield (internal rate of return) and growth rates.
- LG4 Explain the concept and the calculation of yield, and how to find growth rates.
- LG5 Discuss the key sources of risk that might affect potential investment vehicles.
- LG6 Understand the risk of a single asset, risk assessment, and the steps that combine return and risk.

Return and Risk in Australian Super Funds

Superannuation funds and their performance are of concern to most Australians. The returns and risks generated by funds are regularly scrutinised by the financial media and ratings companies. Some believe that large super funds generate higher returns and have less risk than small super funds. However, it turns out that there is little difference between the returns and risks of large funds and smaller ones, as is shown in the table below.

Comparison of Large and Small Fund Returns (31 December 2009)

	One Year Return %	One Year Standard Deviation %	Five Year Return %	Five Year Standard Deviation %
Largest 10 funds	12.7	8.8	4.9	8.8
Smallest 10 funds	14.9	9.7	4.1	8.8

(*Source: Smart Investor*, March 2010, p. 10. Courtesy of the *Australian Financial Review*.)

There were no differences in risk over a five-year period as measured by the standard deviation. Large and small funds had the same volatility. Some might question whether large funds do perform more strongly and face less risk than small ones.

In this chapter the elements of return and risk are detailed and discussed.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Concept of Return

LG1 LG2

return
the level of profit from an investment—that is, the reward for investing.

People are motivated to invest in a given vehicle by its expected return. The **return** is the level of profit from an investment—that is, the reward for investing. Suppose, for example, you have $1000 in a savings account paying 5% annual interest and a business associate asks you to lend her that much money. If you lend her the money for one year, at the end of which she pays you back, your return will depend on the amount of interest you charge. If you make an interest-free loan, your return will be zero. If you charge 5% interest, your return will be $50 (0.05 × $1000). Because you are already earning a safe 5% on the $1000, it seems clear that to equal that return you should charge your associate a minimum of 5% interest.

Some investment vehicles guarantee a return, but most do not. For example, the $1000 deposited in a savings account at a large bank can be viewed as a certain return. The $1000 loan to your business associate might be less certain. The size and the certainty of the expected return are important factors in choosing a suitable investment.

Components of Return

The return on an investment may come from more than one source. The most common source is periodic payments such as dividends or interest. The other source of return is the change in the investment's price. We call these two sources of return *income* and *capital gains* (or *capital losses*), respectively.

Income Income may take the form of dividends from shares, interest received on bonds or rent received from real estate. To be considered income, it must be in the form of cash or be readily convertible into cash. For our purposes, investment **income** is usually cash or near-cash that is periodically received as a result of owning an investment.

income
usually cash or near-cash that is periodically received as a result of owning an investment.

Using the data in Table 4.1, we can calculate the income from investments A and B—both purchased for $1000—over a one-year period of ownership. Investment A would provide income of $80, investment B $120. Solely on the basis of the income received over the one-year period, investment B seems preferable.

Capital Gains (or Losses) The second dimension of return is concerned with the change, if any, in the market value of an investment. As noted in Chapter 1, the amount by which the proceeds from the sale of an investment exceed its original purchase price is called a *capital gain*. If an investment is sold for less than its original purchase price, a *capital loss* results.

TABLE 4.1 Profiles of Two Investments

	Investment	
	A	B
Purchase price (beginning of year)	$1000	$1000
Cash received		
1st quarter	$ 10	$ 0
2nd quarter	20	0
3rd quarter	20	0
4th quarter	30	120
Total income (for year)	$ 80	$ 120
Sale price (end of year)	$1100	$ 960

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

We can calculate the capital gain or loss of the investments A and B in Table 4.1. For investment A, a capital gain of $100 ($1100 sale price − $1000 purchase price) is realised over the one-year period. In the case of investment B, a $40 capital loss ($960 sale price − $1000 purchase price) results. Combining the capital gain (or loss) with the income (calculated in the preceding section) gives the **total return** on each investment:

total return
the sum of the current income and the capital gain (or loss) earned on an investment over a specified period of time.

	Investment	
Return	A	B
Income	$ 80	$120
Capital gain (loss)	100	(40)
Total return	$180	$ 80

In terms of the total return earned on the $1000 investment over the one-year period, investment A is superior to investment B.

It is generally preferred to use *percentage returns* rather than dollar returns. Percentages allow direct comparison of different sizes and types of investments. Investment A earned an 18% return ($180 ÷ $1000); B produced only an 8% return ($80 ÷ $1000). At this point investment A appears preferable but, as will be seen, differences in risk might cause some investors to prefer B.

Why Return Is Important

An asset's return is a key variable in the investment decision because it indicates how rapidly an investor can build wealth. Naturally, because most people prefer to have more wealth rather than less, they prefer investments that offer high returns rather than low returns if all else is equal. However, we've already said that the returns on most investments are uncertain, so how do investors distinguish assets that offer high returns from those likely to produce low returns? One way to make this kind of assessment is to examine the returns that different types of investments have produced in the past.

Historical Performance Most people recognise that future performance is not guaranteed by past performance, but past data often provide a meaningful basis for formulating future expectations. A common practice in the investment world is to look closely at the historical record when formulating expectations about the future.

Interest rates and other measures of financial return are most often cited on an annual basis. Evaluation of past investment returns is typically done on the same basis. Consider the data for a hypothetical investment presented in Table 4.2.

Two aspects of these data are important. First, we can determine the average level of return generated by this investment over the past 10 years. Second, we can analyse the trend in this return. As a percentage, the average total return (column 6) over the past 10 years was 8.10%. Looking at the yearly returns, we can see that after the negative return in 2002, four years of positive and generally increasing returns occurred before the negative return was repeated in 2007. From 2008 to 2011, positive increasing returns were again realised.

Expected Return In the final analysis, it is the future that matters when we make investment decisions. Therefore, **expected return** is a vital measure of performance. It's what you think the investment will earn in the future that determines what you should be willing to pay for it.

expected return
the return an investor thinks an investment will earn in the future.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 4.2 Historical Investment Data for Hypothetical Investment

EXCEL With Spreadsheets

Year	Market Value (Price) (1) Income	(2) Beginning of Year	(3) End of Year	(4) (3)−(2) Capital Gain	Total Return (5) (1) + (4) ($)	(6) (5) ÷ (2) (%)*
2002	$4.00	$100	$ 95	−$ 5.00	−$ 1.00	−1.00
2003	3.00	95	99	4.00	7.00	7.37
2004	4.00	99	105	6.00	10.00	10.10
2005	5.00	105	115	10.00	15.00	14.29
2006	5.00	115	125	10.00	15.00	12.00
2007	3.00	125	120	−5.00	−2.00	−1.60
2008	3.00	120	122	2.00	5.00	4.17
2009	4.00	122	130	8.00	12.00	9.84
2010	5.00	130	140	10.00	15.00	11.54
2011	5.00	140	155	15.00	20.00	14.29
Average	$4.10			$ 5.50	$ 9.60	8.10%

*Percentage return on beginning-of-year market value of investment.

To demonstrate, let's return to the data in Table 4.2. Looking at the historical return figures in the table, an investor would note the increasing trend in returns from 2008 to 2011. But to project future returns, we need insights into the investment's prospects. If the trend in returns seems likely to continue, an expected return in the range of 12–15% for 2012 or 2013 would seem reasonable. On the other hand, if future prospects seem poor, or if the investment is subject to cycles, an expected return of 8–9% may be a more reasonable estimate. Over the past 10 years, the investment's returns have cycled from one poor year (2002 and 2007) to four years of increasing return (2003–2006 and 2008–2011). We might therefore expect low returns in 2012 to be followed by increasing returns in the 2013–2016 period.

Level of Return

The level of return achieved or expected from an investment will depend on a variety of factors. The key factors are internal characteristics and external forces.

INVESTOR FACTS

LUCKY COUNTRY—Recent evidence shows that Australia is a lucky country for equity returns. Over 110 years (1900–2009) Australia's share market is the best performing of 19 developed countries. Long-term real return on equities (% p.a.) for Australia was 7.5, United States 6.2 and United Kingdom 5.3; the average for 19 countries was 5.4.

(*Source: Smart Investor*, April 2010, p. 12. Courtesy of the *Australian Financial Review*.)

Internal Characteristics Certain characteristics of an investment affect its return. For companies issuing securities, characteristics include the type of investment (shares or fixed-income securities), the quality of the management, and whether operations are financed with debt or equity. For example, the shares of a large, well-managed, completely equity-financed plastics manufacturer whose major customer is Telstra would be expected to provide a level of return different from that of a small, poorly managed, largely debt-financed clothing manufacturer whose customers are small specialty stores. As we will see in later chapters, assessing internal factors and their impact on return is one important step in analysing potential investments.

External Forces External forces such as Reserve Bank actions, shortages, terrorism, price controls and political events may also affect the level of return. None of these is under the control of the issuer of the investment

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

vehicle, and investments react differently to these forces. It is not unusual to find two vehicles with similar internal characteristics offering significantly different returns. As a result of the same external force, the expected return from one vehicle may increase, whereas that from another decreases. Likewise, the economies of various countries respond to external forces in different ways.

inflation
a period of generally rising prices.

deflation
a period of generally declining prices.

Another external force is the *general level of price changes*, either up—**inflation**—or down—**deflation**. Inflation tends to have a positive impact on certain types of investments vehicles, such as real estate, and a negative impact on others, such as shares and fixed-income securities. Rising interest rates, which normally accompany increasing rates of inflation, can significantly affect returns. Depending on which actions, if any, the federal government takes to control inflation, its presence can increase, decrease or have no effect on investment returns. Furthermore, the return on each *type* of investment vehicle exhibits its own unique response to inflation.

Historical Returns

Returns vary both over time and between different types of investments. By averaging historical returns over a long period of time, it is possible to observe the differences in returns earned by various types of investments. Table 4.3 shows the arithmetic average annual rates of return for equity investments in developed countries over the 100-year period from 1900 to 2000. With 100 years of data to draw on, some clear patterns emerge. You can see that significant differences exist among the average annual rates of return realised on shares and the volatility of real returns. Australia has exhibited low volatility. Later in this chapter it will be demonstrated how to link these differences in return to differences in the risk of investments.

We now turn our attention to the role that time value of money concepts play in determining investment returns.

TABLE 4.3 Real (Inflation-adjusted) Equity Returns around the World, 1900–2000

Country	Geometric Mean%	Arithmetic Mean %	Standard Error %	Standard Deviation %	Minimum Return %	Minimum Year	Maximum Return %	Maximum Year
Australia	7.5	9.0	1.8	17.7	–34.2	1974	53.5	1983
Belgium	2.5	4.8	2.3	22.8	–40.9	1947	100.5	1940
Canada	6.4	7.7	1.7	16.8	–32.0	1974	55.2	1933
Denmark	4.6	6.2	2.0	20.1	–28.4	1974	106.1	1983
France	3.8	6.3	2.3	23.1	–37.5	1947	66.1	1954
Germany	3.6	8.8	3.2	32.3	–89.6	1948	155.9	1949
Ireland	4.8	7.0	2.2	22.2	–54.3	1974	69.9	1977
Italy	2.7	6.8	2.9	29.4	–72.9	1945	120.7	1946
Japan	4.5	9.3	3.0	30.3	–84.0	1946	119.6	1952
The Netherlands	5.8	7.7	2.1	21.0	–34.9	1941	101.6	1940
South Africa	6.8	9.1	2.3	22.8	–52.2	1920	102.9	1933
Spain	3.6	5.8	2.2	22.0	–43.3	1977	98.9	1986
Sweden	7.6	9.9	2.3	22.8	–43.0	1918	89.5	1905
Switzerland*	5.0	6.9	2.1	20.4	–37.8	1974	56.2	1985
United Kingdom	5.8	7.6	2.0	20.0	–57.1	1974	96.7	1975
United States	6.7	8.7	2.0	20.2	–38.0	1931	56.8	1933

*Swiss equities are from 1911.
(*Source:* Elroy Dimson, Paul Marsh and Mike Staunton 2002, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press, Princeton, NJ, p. 60. Copyright © 2002. Reprinted by permission of Princeton University Press.)

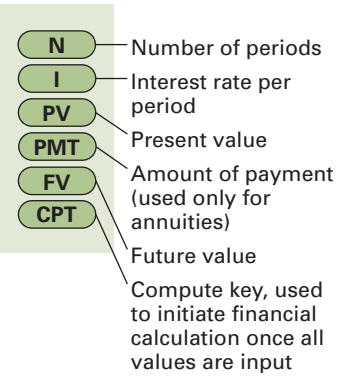
Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Time Value of Money and Returns

As a general rule, *the sooner you receive cash the better.* For example, two investments each requiring a $1000 outlay and each expected to return $100 interest over a two-year holding period are *not necessarily* equally desirable. If the first investment returns $50 at the end of the first year, and the second investment returns nothing the first year and $100 at the end of the second year, the first investment is preferable because the initial $50 it pays could be *reinvested to earn more interest* in the second year. You should not fail to consider time value concepts when making investment decisions.

We now review the key computational aids available for streamlining time value of money calculations, and then we demonstrate the application of time value of money techniques to determine an acceptable investment.

Computational Aids for Use in Time Value Calculations The often time-consuming calculations involved in applying time value of money techniques can be simplified with a number of computational aids. Throughout this book we will demonstrate the use of hand-held financial calculators and electronic spreadsheets. *Financial calculators* include numerous preprogrammed financial routines. To demonstrate the calculator keystrokes for various financial computations, we show a keypad in the margin of the book, with the keys as defined below. *Electronic spreadsheet* use has become a prime skill for today's investors. Like financial calculators, electronic spreadsheets have built-in routines that simplify time value calculations. For most time value calculations in the book, we show spreadsheet solutions that identify cell entries.



Determining a Satisfactory Investment Time value of money techniques can be used to determine whether an investment's return is satisfactory given the investment's cost. Ignoring risk at this point, a **satisfactory investment** would be one for which the present value of benefits (discounted at the appropriate rate) *equals* or *exceeds* its cost. The three possible benefit–cost relationships and their interpretations follow:

satisfactory investment
an investment whose present value of benefits (discounted at the appropriate rate) equals or exceeds the present value of its costs.

1. If the present value of the benefits *just equals the cost*, you would earn a rate of return equal to the discount rate.
2. If the present value of benefits *exceeds the cost*, you would earn a rate of return greater than the discount rate.
3. If the present value of benefits is *less than the cost*, you would earn a rate of return less than the discount rate.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

You would prefer only those investments for which the present value of benefits equals or exceeds its cost—situations 1 and 2. In these cases, the rate of return would be equal to or greater than the discount rate.

The information in Table 4.4 demonstrates the application of present value to investment decision making. (*Note:* You can use a financial calculator or an Excel spreadsheet to convert the algebraic expression in column 2 to the numeric value in column 3.) The present value of the benefits (i.e. the income) provided by this investment over its seven-year life is $1175.85. If the cost of the investment today is $1175.85 or less, then the investment is acceptable. At that cost, an investor would earn a rate of return equal to at least 8%. At a cost above the $1175.85 present value, the investment would not be acceptable because the rate of return would be less than 8%. In that case it would be preferable to find an alternative investment with a present value of benefits that equals or exceeds its cost.

For your convenience, **Appendix 4A provides a complete review of the important time value of money techniques.** Be sure to review it before reading ahead, to make sure you have an adequate understanding of this important financial concept.

TABLE 4.4 Present Value Applied to an Investment EXCEL With Spreadsheets

End of Year	(1) Income	(2) Present Value Calculation at 8%	(3) Present Value at 8%
1	$ 90	$ 90 ÷ $(1 + 0.08)^1$	$ 83.33
2	100	100 ÷ $(1 + 0.08)^2$	85.73
3	110	110 ÷ $(1 + 0.08)^3$	87.32
4	120	120 ÷ $(1 + 0.08)^4$	88.20
5	100	100 ÷ $(1 + 0.08)^5$	68.06
6	100	100 ÷ $(1 + 0.08)^6$	63.02
7	1200	1200 ÷ $(1 + 0.08)^7$	700.19
		Total Present Value	$1175.85

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

4.1 Explain what is meant by the *return* on an investment. Differentiate between the two components of return—income and capital gains (or losses).

4.2 What role do historical performance data play in estimating an investment's expected return? Discuss the key factors affecting investment returns—internal characteristics and external forces.

4.3 What is a *satisfactory investment*? When the present value of benefits exceeds the cost of an investment, what can you conclude about the rate of return earned by the investor relative to the discount rate?

Measuring Return

LG3 LG4

Thus far, we have discussed the concept of return in terms of its two components (income and capital gains) and the key factors that affect the level of return (internal characteristics and external forces). These discussions intentionally oversimplified the calculations usually involved in determining the historical or expected return. To

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

compare returns from different investments, we need to incorporate time value of money concepts that explicitly consider differences in the timing of investment income and capital gains (or losses). We must be able to calculate the present value of future benefits. Here we will look at several measures that enable us to assess and compare alternative investment vehicles. First, we must define and consider the relationships among various rates of return.

Real, Risk-Free and Required Returns

Rational investors will choose investments that fully compensate them for the risk involved. The greater the risk, the greater the return required by investors. The return that fully compensates for an investment's risk is called the **required return**. The required return on any investment j consists of three basic components: the real rate of return, an expected inflation premium and a risk premium, as noted in Equation 4.1.

required return
the rate of return an investor must earn on an investment to be fully compensated for its risk.

Equation 4.1

$$\text{Required return on investment } j = \text{Real rate of return} + \text{Expected inflation premium} + \text{Risk premium for investment } j$$

Equation 4.1a

$$r_j = r^* + IP + RP_j$$

real rate of return
the rate of return that could be earned in a perfect world where all outcomes were known and certain—where there was no risk.

expected inflation premium
the average rate of inflation expected in the future.

risk-free rate
the rate of return that can be earned on a risk-free investment; the sum of the real rate of return and the expected inflation premium.

The **real rate of return** is the rate of return that could be earned in a perfect world where all outcomes were known and certain—where there was no risk. In such a world, the real rate of return would create an equilibrium between the supply of savings and the demand for funds. The real rate of return changes with changing economic conditions, tastes and preferences. Historically, it has been relatively stable and in the range of 1–2%. For convenience, we'll assume a real rate of return of 2%.

The **expected inflation premium** represents the average rate of inflation expected in the future. By adding the expected inflation premium to the real rate of return, we get the **risk-free rate**—the rate of return that can be earned on a risk-free investment, most commonly an Australian Treasury bond. This rate is shown in Equation 4.2.

Equation 4.2

$$\text{Risk-free rate} = \text{Real rate of return} + \text{Expected inflation premium}$$

Equation 4.2a

$$R_F = r^* + IP$$

To demonstrate, a real rate of return of 2% and an expected inflation premium of 4% would result in a risk-free rate of return of 6%.

risk premium
a return premium that reflects the issue and issuer characteristics associated with a given investment vehicle.

The required return can be found by adding to the risk-free rate a **risk premium**, which varies depending on specific issue and issuer characteristics. *Issue characteristics* are the type of vehicle (e.g. share, bond), its maturity (e.g. two years, five years, infinity) and its features (e.g. voting/non-voting, callable/non-callable). *Issuer characteristics* are industry and company factors such as the line of business and financial condition of the issuer. Together, these factors cause investors to require a risk premium above the risk-free rate.

Substituting the risk-free rate, R_F, from Equation 4.2a into Equation 4.1a for the first two terms to the right of the equal signs ($r^* + IP$), we get Equation 4.3.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Equation 4.3

$$\text{Required return on investment } j = \text{Risk-free rate} + \text{Risk premium for investment } j$$

Equation 4.3a

$$r_j = R_F + RP_j$$

For example, if the required return on Telstra shares is 11% when the risk-free rate is 6%, investors require a 5% risk premium (11% – 6%) as compensation for the risk associated with shares (the issue) and Telstra (the issuer). Later in this chapter, the relationship between the risk premium and required returns is further developed.

Next, we consider the specifics of return measurement. We look at two return measures—one used primarily for short-term investments and the other for longer term vehicles.

Holding Period Return

The return to a *saver* is the amount of interest earned on a given deposit. However, the amount 'invested' in a savings account is not subject to change in value, unlike the amount invested in shares, bonds, managed funds and real estate. Because we are concerned with a broad range of investment vehicles, we need a measure of return that captures both periodic income and changes in value. One such measure is the *holding period return*.

holding period
the period of time over which one wishes to measure the return on an investment.

The **holding period** is the period of time over which one wishes to measure the return on an investment. When comparing returns, be sure to use holding periods of the same length. For example, comparing the return on shares over a six-month period with the return on a bond over a one-year period could result in a poor investment decision. To avoid this problem, be sure you define the holding period. It is common practice to annualise the holding period and use that as a standard.

Understanding Return Components Earlier in this chapter we identified the two components of investment return: income and capital gains (or losses). The portion of income received by the investor during the period is a **realised return**. Most but not all of an investment's income is realised. Capital gains and losses, on the other hand, are realised *only* when the investment vehicle is actually sold at the end of the holding period. Until the sale, the capital gain is merely a **paper return**.

realised return
the income actually received by an investor during a given period.

paper return
a return that has been achieved but not yet realised by an investor during a given period.

For example, the capital gain return on an investment that increases in market value from $50 to $70 during a year is $20. For that capital gain to be realised, you would have to have sold the investment for $70 at the end of that year. An investor who purchased the same investment but plans to hold it for another three years would also have experienced the $20 capital gain return during the first year, but he or she *would not have realised the gain in terms of cash flow*. However, *even if the capital gain is not realised, it must be included in the total return calculation.*

A second point to recognise about returns is that *both* the income and the capital gains components *can* have a negative value. Occasionally, an investment may have negative income. You may be required to pay out cash to meet certain obligations. (This situation is most likely to occur in various types of property investments that require periodic maintenance.) A capital loss can occur on *any* investment: shares, bonds, options, futures, managed funds, real estate and gold can all decline in market value.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

holding period return (HPR) the total return earned from holding an investment for a specified holding period (usually one year or less).

Computing the Holding Period Return (HPR)

The **holding period return** (HPR) is the total return earned from holding an investment for a specified period of time (the holding period). *This measure is customarily used with holding periods of one year or less.* (We'll explain why later.) It represents the sum of income and capital gains (or losses) achieved over the holding period, divided by the beginning investment value. The equation for HPR is:

Equation 4.4

$$\text{Holding period return} = \frac{\text{Income during period} + \text{Capital gain (or loss) during period}}{\text{Beginning investment value}}$$

Equation 4.4a

$$HPR = \frac{Inc + CG}{V_0}$$

where

Equation 4.5

$$\text{Capital gain (or loss) during period} = \text{Ending investment value} - \text{Beginning investment value}$$

Equation 4.5a

$$CG = V_n - V_0$$

The HPR equation provides a convenient method for either measuring the total return realised or estimating the total return expected on a given investment. For example, Table 4.5 summarises the key financial variables for four investment vehicles over the past year. The total income and capital gain or loss for each during the holding period are given in the lines labelled (1) and (3), respectively. The total return over the year is calculated, as shown in line (4), by adding these two sources of return. Dividing the total return value (line (4)) by the beginning-of-year investment value (line (2)), we find the holding period return, given in line (5). Over the one-year holding period, the shares had the highest HPR (12.25%), and the savings account had the lowest (6%).

TABLE 4.5 Key Financial Variables for Four Investment Vehicles

EXCEL With Spreadsheets

	Investment Vehicle			
	Savings Account	Shares	Bonds	Real Estate
Cash received				
1st quarter	$ 15	$ 10	$ 0	$ 0
2nd quarter	15	10	70	0
3rd quarter	15	10	0	0
4th quarter	15	15	70	0
(1) Total current income	$ 60	$ 45	$ 140	$ 0
Investment value				
End of year	$1000	$2200	$ 970	$3300
(2) Beginning of year	1000	2000	1000	3000
(3) Capital gain (loss)	$ 0	$ 200	($ 30)	$ 300
(4) Total return [(1) + (3)]	$ 60	$ 245	$ 110	$ 300
(5) Holding period return [(4) ÷ (2)]	6.00%	12.25%	11.00%	10.00%

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

As these calculations show, to find the HPR we need the beginning- and end-of-period investment values, along with value of current income received by the investor during the period. Note that if the current income and capital gain (or loss) values in lines (1) and (3) of Table 4.5 had been drawn from a six-month rather than a one-year period, the HPR values calculated in line (5) would have been *the same*.

Holding period return can be negative or positive. HPRs can be calculated with Equation 4.4 using either historical data (as in the preceding example) or forecast data.

Using the HPR in Investment Decisions The holding period return is easy to use in making investment decisions. Because it considers both income and capital gains relative to the beginning investment value, it tends to overcome any problems that might be associated with comparing investments of different size.

If we look only at the *total returns* calculated for each of the four investments in Table 4.5 (line (4)), the real estate investment appears best, because it has the highest total return. However, the real estate investment would require the largest dollar outlay ($3000). The holding period return offers a *relative comparison,* by dividing the total return by the amount of the investment. Comparing HPRs, we find the investment alternative with the *highest return per invested dollar*: the HPR of 12.25% of shares. Because the return per invested dollar reflects the efficiency of the investment, the HPR provides a logical method for evaluating and comparing the investment returns, particularly for holding periods of one year or less.

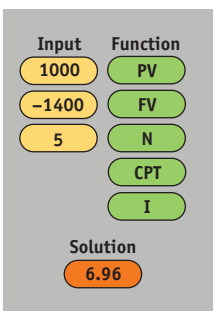
Yield: The Internal Rate of Return

An alternative way to define a satisfactory investment is in terms of the compounded annual rate of return it earns. Why do we need an alternative to the HPR? Because *HPR fails to consider the time value of money.* Although the holding period return is useful with investments held for one year or less, it is generally inappropriate for longer holding periods. Sophisticated investors typically do not use HPR when the time period is greater than one year. Instead, they use a present-value-based measure, called **yield** or **internal rate of return**, to determine the compounded annual rate of return earned on investments held for longer than one year. Yield can be defined as the discount rate that produces a present value of benefits just equal to its cost.

yield (internal rate of return) the compounded annual rate of return earned by a long-term investment; the discount rate that produces a present value of the investment's benefits that just equals its cost.

Once you know the yield you can decide whether an investment is acceptable. If the yield on an investment is *equal to or greater than the required return*, then the investment is acceptable. An investment with a yield *below the required return* is unacceptable.

The yield on an investment providing a single future cash flow is relatively easy to calculate. The yield on an investment providing a stream of future cash flows generally involves more complex calculations. Many hand-held financial calculators as well as computer software programs are available for simplifying these calculations.



Yield for a Single Cash Flow Some investments, such as mining shares paying no dividends and zero-coupon bonds, are purchased by paying a fixed amount up front. The investor expects them to provide *no periodic income,* but to provide a single—and, the investor hopes, a large—future cash flow at maturity or when the investment is sold. The yield on investments expected to provide a single future cash flow can be estimated using a financial calculator or an Excel spreadsheet.

Calculator Use Assume you wish to find the yield on an investment that costs $1000 today and will be worth $1400 at the end of five years. Using a financial calculator to find the yield for this investment, we can treat the earliest value as a present value, **PV**, and the latest value as a future value, **FV**. (*Note:* Most calculators require you to key in

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

either the **PV** or the **FV** as a negative number to calculate an unknown yield.) Using the inputs shown in the margin on the previous page, we find the yield to be 6.96%.

SPREADSHEET USE The yield for the single cash flow can also be calculated as shown on the following Excel spreadsheet.

	A	B
1	YIELD FOR A SINGLE CASH FLOW	
2	Point in Time	Cash Flow
3	Future	$1400
4	Present	$1000
5	Number of Years	5
6	Yield	6.96%

Entry in Cell B6 is
= Rate((B5),0,–B4,B3,0),
The minus sign appears before B4
because the present investment
is treated as a cash outflow.

Yield for a Stream of Income Investments such as income-oriented shares and bonds typically provide the investor with a *stream of income*. The yield (or internal rate of return) for a stream of income (returns) is generally more difficult to estimate. The most accurate approach is based on searching for the discount rate that produces a present value of income just equal to the cost of the investment. For example, consider once more the investment presented in Table 4.4. That table illustrates that if the investment's cost is $1175.85, its internal rate of return equals 8% because that's the discount rate that equates the present value of the investment's cash flows to its market price. Suppose that the cost of this investment falls to $1100. At that price, what yield does the investment offer? Table 4.6 uses a trial and error approach in an attempt to find the answer. If we discount the investment's cash flows at 9%, its price is $1117.75. That's above the investment's current price, so the yield must be above 9%. Table 4.6 shows that at a 10% discount rate, the investment's price is $1063.40, so its yield must be below 10%. Therefore, we need to keep searching for the exact discount rate at which the investment's cash flows equal $1100. We can do this using a financial calculator or an Excel spreadsheet.

CALCULATOR USE We can use a financial calculator to find the yield (or *internal rate of return*) on an investment that will produce a stream of income. This procedure typically involves three steps:

TABLE 4.6 Present Value Applied to an Investment EXCEL With Spreadsheets

End of Year	(1) Income	(2) Present Value Calculation at 9%	(3) Present Value at 9%	(4) Present Value Calculation at 10%	(5) Present Value at 10%
1	$ 90	$ 90 ÷ $(1 + 0.09)^1$	$ 82.57	$ 90 ÷ $(1 + 0.1)^1$	$ 81.82
2	100	100 ÷ $(1 + 0.09)^2$	84.17	100 ÷ $(1 + 0.1)^2$	82.64
3	110	110 ÷ $(1 + 0.09)^3$	84.94	110 ÷ $(1 + 0.1)^3$	82.64
4	120	120 ÷ $(1 + 0.09)^4$	85.01	120 ÷ $(1 + 0.1)^4$	81.96
5	100	100 ÷ $(1 + 0.09)^5$	64.99	100 ÷ $(1 + 0.1)^5$	62.09
6	100	100 ÷ $(1 + 0.09)^6$	59.63	100 ÷ $(1 + 0.1)^6$	56.45
7	1200	1200 ÷ $(1 + 0.09)^7$	656.44	1200 ÷ $(1 + 0.1)^7$	615.79
Total Present Value			$1117.75		$1063.40

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

1. Punch in the cost of the investment (typically referred to as the *cash outflow* at time zero).
2. Punch in all of the income expected each period (typically referred to as the *cash inflow* in year x).
3. Calculate the yield (typically referred to as the *internal rate of return*, *IRR*).

SPREADSHEET USE We can also calculate the yield for a stream of income as shown on the following Excel spreadsheet.

	A	B
1	YIELD FOR A STREAM OF INCOME	
2	Year	Cash Flow
3	0	$ (1100)
4	1	$ 90
5	2	$ 100
6	3	$ 110
7	4	$ 120
8	5	$ 100
9	6	$ 100
10	7	$ 1200
11	Yield	9.32%

Entry in Cell B10 is =IRR(B2:B10). The initial $1100 cost of the investment is a cash outflow.

Interest on Interest: The Critical Assumption The critical assumption underlying the use of yield as a return measure is an ability to earn a return equal to the yield on *all income* received during the holding period. This concept can best be illustrated with a simple example. Suppose you buy a $1000 Treasury bond that pays 8% annual interest ($80) over its 20-year maturity. Each year you receive $80, and at maturity the $1000 in principal is repaid. There is no loss in capital, no default; all payments are made right on time. But you must be able to *reinvest* the $80 annual interest receipts in order to earn 8% on this investment.

Figure 4.1 shows the elements of return on this investment to demonstrate the point. If you don't *reinvest* the interest income of $80 per year, you will end up on the 5% line. You will have $2600—the $1000 principal plus $1600 interest income ($80/year × 20 years)—at the end of 20 years. (The yield on a single cash flow of $1000 today that will be worth $2600 in 20 years is about 5%.) To move to the 8% line, you have to earn 8% on the annual interest receipts. If you do, you will have $4661—the $1000 principal plus the $3661 future value of the 20-year $80 annuity of interest receipts invested at 8%. (The yield on a single cash flow of $1000 today that will be worth $4661 in 20 years is 8%.) The future value of the investment would be $2061 greater ($4661 – $2600) with interest on interest than without reinvestment of the interest receipts.

It should be clear to you that if you start out with an 8% investment, *you have to earn that same rate of return when reinvesting your income*. The rate of return you start with is the required, or minimum, **reinvestment rate**—the rate of return earned on interest or other income received over the relevant investment horizon. By putting your income to work at this rate, you will earn the rate of return you set out to. If you fail to do so, your return will decline accordingly.

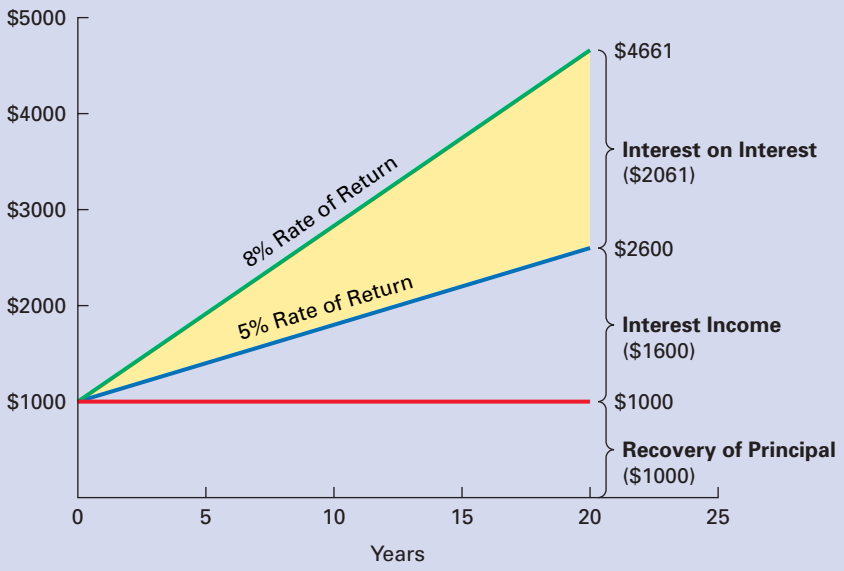
reinvestment rate
the rate of return earned on interest or other income received from an investment over its investment horizon.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 4.1

Earning Interest on Interest

If you invested in a $1000, 20-year bond with an 8% coupon, you would have only $2600 at the end of 20 years if you did not reinvest the $80 annual interest receipts—only about a 5% rate of return. If you reinvested the interest at the 8% interest rate, you would have $4661 at the end of 20 years—an 8% rate of return. To achieve the calculated yield of 8%, you must therefore be able to earn interest on interest at that rate.



fully compounded rate of return
the rate of return that includes interest earned on interest.

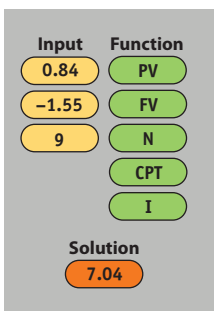
The earning of interest on interest is what the market refers to as a **fully compounded rate of return**. It's an important concept: you can't start reaping the full potential from your investments until you start earning a fully compounded rate of return on them.

Interest on interest is a particularly important element of return for investment programs that involve a lot of current income. In contrast to capital gains, the individual investor has to reinvest the current income. (With capital gains, the investment vehicle itself is automatically doing the reinvesting.) It follows, therefore, that for investment programs that lean towards income-oriented securities, interest on interest—and the continued reinvestment of income—play an important role in investment success.

Finding Growth Rates

rate of growth
the compound annual rate of change in the value of a stream of income.

In addition to finding compound annual rates of return, we frequently need to find the **rate of growth**. This is the compound annual rate of change in the value of a stream of income, particularly dividends or earnings. Here we use an example to demonstrate a simple technique for estimating growth rates using either a financial calculator or an Excel spreadsheet.



CALCULATOR USE Imagine that you wish to find the rate of growth for the dividends given in the Excel spreadsheet on page 102. Although 10 years of data are presented, they represent only nine years of growth.

Using a financial calculator to find the growth rate for the dividend stream shown, we treat the earliest (2002) value as a present value, **PV**, and the latest (2011) value as a future value, **FV**. (*Note:* Most calculators require you to key in *either* the **PV** or the **FV** as a negative number to calculate an unknown growth rate.) As noted above, although 10 years of dividends are shown, there are only nine years of growth (**N** = 9) because the earliest year (2002) must be defined as the base year (year 0). Using the inputs shown on the left, we calculate the growth rate to be 7.04%.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

	A	B
1	GROWTH RATE FOR A DIVIDEND STREAM	
2	Year	Dividend/share
3	2011	$1.55
4	2010	$1.37
5	2009	$1.28
6	2008	$1.14
7	2007	$1.06
8	2006	$0.98
9	2005	$0.92
10	2004	$0.91
11	2003	$0.88
12	2002	$0.84
13	Annual growth rate	7.04%

Entry in Cell B13 is
=RATE((A3–A12),0,–B12,B3,0).
The expression A3–A12 in the entry calculates the number of years of growth. The minus sign appears before B12 because the investment in 2002 is treated as a cash outflow.

SPREADSHEET USE The growth rate for a dividend stream can also be calculated as shown on the Excel spreadsheet above.

In Chapter 8 we explore in greater detail the use of growth rates, which are often an important input to the share valuation process.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

4.4 Define the following terms and explain how they are used to find the risk-free rate of return and the required rate of return for a given investment.

a. *Real rate of return*
b. *Expected inflation premium*
c. *Risk premium* for a given investment

4.5 What is meant by the *holding period*, and why is it advisable to use holding periods of equal length when comparing alternative investment vehicles? Define the *holding period return (HPR)* and explain for what length of holding periods it is typically used.

4.6 Define *yield* or *internal rate of return* and explain when it is appropriate to use yield rather than the HPR to measure the return on an investment.

4.7 Explain why you must earn 10% on *all* income received from an investment during its holding period in order for its yield actually to equal the 10% value you have calculated.

4.8 Explain how either the present value (of benefits versus cost) or the yield measure can be used to find a *satisfactory investment*. Given the following data, indicate which, if any, of these investments is acceptable. Explain your findings.

	Investment		
	A	B	C
Cost	$200	$160	$500
Appropriate discount rate	7%	10%	9%
Present value of benefits	—	$150	—
Yield	8%	—	8%

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Risk: The Other Side of the Coin

LG5 LG6

risk
the uncertainty surrounding the actual return that an investment will generate.

Thus far, our primary concern in this chapter has been return. However, we cannot consider return without also looking at **risk**, the uncertainty surrounding the actual return that an investment will generate.

The risk associated with a given investment is directly related to its expected return. In general, the greater the investment's risk, the higher the expected return it must offer to attract investors. Riskier investments should provide higher levels of return.

In general, investors attempt to minimise risk for a given level of return or to maximise return for a given level of risk. This relationship between risk and return is called the **risk–return tradeoff**. It is introduce here and will be discussed in greater detail in Chapter 5. Here we begin by examining the key sources of risk. Also considered will be risk measurement and assessment, risk of a single asset, risk in potential investments, and the steps by which return and risk can be combined in the decision process.

risk–return tradeoff
the relationship between risk and return, in which investments with more risk should provide higher returns, and vice versa.

Sources of Risk

The risk associated with a given investment vehicle may result from a combination of possible sources. A prudent investor considers how the major sources of risk might affect potential investment vehicles. The combined impact of the presence of any of the sources of risk, discussed following, in a given investment vehicle would be reflected in its *risk premium*. As discussed earlier in the chapter and shown in Equation 4.3, we can find the required return on an investment by adding its risk premium to the risk-free rate. This premium in a broad sense results from the sources of risk, which derive from characteristics of both the issue and the issuer.

business risk
the degree of uncertainty associated with an investment's earnings and the investment's ability to pay the returns owed to investors.

financial risk
the degree of uncertainty of payment attributable to the mix of debt and equity used to finance a company or property; the larger the proportion of debt financing, the greater this risk.

Business Risk In general, **business risk** is the degree of uncertainty associated with an investment's earnings and the investment's ability to pay interest, principal, dividends and any other returns owed to investors. For example, business owners may receive no return if earnings are not adequate to meet obligations. Debtholders, on the other hand, are likely to receive some—but not necessarily all—of the amount owed to them, because of the preferential treatment legally accorded to debt.

The business risk associated with a given investment is tied to the company's industry. For example, the business risk of ANZ shares differs from that of a high-fashion clothing manufacturer or a parcel of commercial real estate. Generally, investments in similar kinds of companies or properties have similar business risk, although differences in management, costs and location can cause varying levels of risk.

Financial Risk Companies that borrow money sometimes experience financial difficulties because they cannot generate enough cash to pay all of their bills, including debt payments. The uncertainty surrounding a company's ability to meet its financial obligations because it has borrowed money is **financial risk**. The more debt used to finance a company, the greater its financial risk. Debt financing obligates the company to make interest and principal payments, thus increasing risk. Inability to meet debt obligations could result in business failure and in losses for bondholders and shareholders.

Purchasing Power Risk The chance that unanticipated changes in price levels (inflation or deflation) will adversely affect investment returns is

INVESTOR FACTS

SOME INVESTING TIPS—Most bonds make interest payments that do not change once the bonds are issued. They are among the investments most vulnerable to purchasing power risk. Governments sell many bonds with this feature, but they also sell a category of bonds known as I-bonds or index-linked bonds. The interest payments made on I-bonds automatically rise as price levels increase, so investors who hold these bonds know that the purchasing power of their investments is protected.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

purchasing power risk
the chance that changing price levels in the economy (inflation or deflation) will adversely affect investment returns.

purchasing power risk. Specifically, this risk is the chance that generally rising prices (inflation) will reduce *purchasing power* (the goods and services that can be purchased with a dollar).

In general, investments whose values move with general price levels have low purchasing power risk and are most profitable during periods of rising prices. Those that provide fixed returns have high purchasing power risk, and they are most profitable during periods of low inflation or declining price levels. The returns on shares of durable-goods manufacturers, for example, tend to move with the general price level, whereas returns from deposit accounts and bonds do not.

interest rate risk
the chance that changes in interest rates will adversely affect a security's value.

Interest Rate Risk Securities are especially affected by interest rate risk; this is particularly true for those securities that offer purchasers a fixed periodic return. **Interest rate risk** is the chance that changes in interest rates will adversely affect a security's value. The interest rate changes themselves result from changes in the general relationship between the supply of and the demand for money.

As interest rates change, the prices of many securities fluctuate. As we will see in greater detail in Chapters 11 and 16, the prices of fixed-income securities (bonds and preference shares) drop when interest rates rise. They thus provide purchasers with the same rate of return that would be available at prevailing rates. The opposite occurs when interest rates fall: the return on a fixed-income security is adjusted downward to a competitive level by an upward adjustment in its market price.

A second, more subtle aspect of interest rate risk is associated with reinvestment of income received from an investment. As noted in our earlier discussion of interest on interest, only if you can earn the initial rate of return on income received from an investment can you achieve a *fully compounded rate of return* equal to the initial rate of return. In other words, if a bond pays 8% annual interest, you must be able to earn 8% on the interest received during the bond's holding period in order to earn a fully compounded 8% rate of return over that period. This same aspect of interest rate risk applies to reinvestment of the proceeds received from a bond or other investment at its maturity or sale.

A final aspect of interest rate risk is related to investing in short-term securities such as bills, commercial paper and Treasury notes (discussed in Chapter 1). Investors face the risk that when short-term securities mature, their proceeds may have to be invested in lower-yielding, new short-term securities. By initially making a long-term investment, you can lock in a return for a period of years, rather than face the risk of declines in short-term interest rates. Clearly, when interest rates are declining, the returns from a short-term security investment strategy are adversely affected. (On the other hand, interest rate increases have a positive impact on such a strategy.) The chance that interest rates will decline is therefore the interest rate risk of a short-term security investment strategy.

Most investments are subject to interest rate risk. Although fixed-income securities are mostly directly affected by interest rate movements, they also affect other long-term investment vehicles such as shares and property. *Generally, the higher the interest rate, the lower the value, and vice versa.*

liquidity risk
the risk of not being able to liquidate an investment conveniently and at a reasonable price.

Liquidity Risk The risk of not being able to liquidate an investment conveniently and at a reasonable price is called **liquidity risk**. One can generally sell an investment vehicle merely by significantly cutting its price. However, to be liquid, an investment must be easily sold *at a reasonable price*. For example, a security recently purchased for $1000 would not be viewed as highly liquid if it could be quickly sold only at a greatly reduced price, such as $500.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

An investment's liquidity is an important consideration. In general, investments traded in *thin markets,* where transaction volume is low, tend to be less liquid than those traded in *broad markets*. Assets such as shares and bonds of major companies listed on the ASX are generally highly liquid; others, such as artwork or antique furniture, are relatively illiquid.

tax risk
the chance that the federal government will make unfavourable changes in tax laws, driving down the after-tax returns and market values of certain investments.

Tax Risk The chance that government will make unfavourable changes in tax laws is known as **tax risk**. The greater the chance that such changes will drive down the after-tax returns and market values of certain investments, the greater the tax risk. Undesirable changes in tax laws include elimination of tax exemptions, limitation of deductions and increases in tax rates. During recent years, the federal government has passed a number of changes in tax laws. One of the most significant was the capital gains tax, which contained provisions that reduced the attractiveness of many investment vehicles, particularly real estate and other tax shelters. Though virtually all investments are vulnerable to increases in tax rates, certain tax-advantaged investments, such as alternative energy schemes and natural resources, generally have greater tax risk.

market risk
risk of decline in investment returns because of market factors independent of the given security or property investment.

Market Risk **Market risk** is the risk that investment returns will decline because of market factors independent of the given investment. Examples include political, economic and social events, as well as changes in investor tastes and preferences. Market risk actually embodies a number of different risks: purchasing power risk, interest rate risk and tax risk.

The impact of market factors on investment returns is not uniform. Both the degree and the direction of change in return differ among investment vehicles. For example, legislation placing restrictive import quotas on some Chinese goods may result in a significant increase in the value (and therefore the return) of domestic food manufacturer shares. Essentially, market risk is reflected in the *price volatility* of a security—the more volatile the price of a security, the greater its perceived market risk.

event risk
risk that comes from a largely (or totally) unexpected event that has a significant and usually immediate effect on the underlying value of an investment.

Event Risk **Event risk** occurs when something happens to a company that has a sudden and substantial impact on its financial condition. Event risk goes beyond business and financial risk. It doesn't necessarily mean the company or market is doing poorly. Instead, it involves a largely (or totally) unexpected event that has a significant and usually immediate effect on the underlying value of an investment. An example of event risk is the problems associated with massive fires and floods in Australia, the United States and Europe in 2008–2009, which drove down the share values of insurance firms. Event risk can take many forms and can affect all types of investment vehicles. Fortunately, its impact tends to be isolated.

Risk of a Single Asset

Most people have at some time in their lives asked themselves how risky some anticipated course of action is. In such cases, the answer is usually a subjective judgment, such as 'not very' or 'quite risky'. In finance, we are able to quantify the measurement of risk, which improves comparisons between investments and enhances decision making.

The risk or variability of both single assets and portfolios of assets can be measured statistically. Here we focus solely on the risk of single assets. We first consider standard deviation, an absolute measure of risk. The risk and return of a portfolio of assets are considered in Chapter 5.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

standard deviation, s
a statistic used to measure the dispersion (variation) of returns around an asset's average or expected return.

Standard Deviation: An Absolute Measure of Risk The most common single indicator of an asset's risk is the **standard deviation, *s***, which measures the dispersion (variation) of returns around an asset's average or expected return. The formula is:

Equation 4.6

$$\text{Standard deviation} = \sqrt{\frac{\sum_{i=1}^{n}\left(\begin{array}{c}\text{Return for}\\ \text{outcome } i\end{array} - \begin{array}{c}\text{Average or}\\ \text{expected return}\end{array}\right)^2}{\begin{array}{c}\text{Total number}\\ \text{of outcomes}\end{array} - 1}}$$

Equation 4.6a

$$s = \sqrt{\frac{\sum_{i=1}^{n}(r_i - \bar{r})^2}{n-1}}$$

Consider two competing investments—A and B—described in Table 4.7. Note that both investments earned an average return of 15% over the six-year period 2006–2011. Reviewing the returns shown for each investment in light of their 15% averages, we can see that the returns for investment B vary more from this average than do the returns for investment A.

The standard deviation provides a quantitative tool for assessing and comparing investment risk. Table 4.8 demonstrates the calculation of the standard deviations, s_A and s_B, for investments A and B, respectively. Evaluating the calculations, we can see that the standard deviation of 1.49% for the returns on investment A is, as expected, considerably below the standard deviation of 5.24% for investment B. The greater absolute dispersion of investment B's return, reflected in its larger standard deviation, indicates that B is the more risky investment. Of course, these values are absolute measures based on *historical* data. There is no assurance that the risks of these two investments will remain the same in the future.

TABLE 4.7 Returns on Investments A and B

	Rate of Return	
Year	Investment A	Investment B
2006	15.6%	8.4%
2007	12.7	12.9
2008	15.3	19.6
2009	16.2	17.5
2010	16.5	10.3
2011	13.7	21.3
Average	15.0%	15.0%

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 4.8 Calculation of Standard Deviations of Returns for Investments A and B

EXCEL With Spreadsheets

Investment A

Year (i)	(1) Return r_i %	(2) Average Return $\bar{r}$ %	(3) (1) – (2) $r_i - \bar{r}$ %	(4) $(3)^2$ $(r_i - \bar{r})^2$ %
2006	15.6	15.0	0.6	0.36
2007	12.7	15.0	−2.3	5.29
2008	15.3	15.0	0.3	0.09
2009	16.2	15.0	1.2	1.44
2010	16.5	15.0	1.5	2.25
2011	13.7	15.0	−1.3	1.69
				$\sum_{i=1}^{6} (r_i - \bar{r})^2 = 11.12$

$$s_A = \sqrt{\frac{\sum_{i=1}^{6} (r_i - \bar{r})^2}{n-1}} = \sqrt{\frac{11.12}{6-1}} = \sqrt{2.224} = 1.49\%$$

Investment B

Year (i)	(1) Return r_i %	(2) Average Return $\bar{r}$ %	(3) (1) – (2) $r_i - \bar{r}$ %	(4) $(3)^2$ $(r_i - \bar{r})^2$ %
2006	8.4	15.0	−6.6	43.56
2007	12.9	15.0	−2.1	4.41
2008	19.6	15.0	4.6	21.16
2009	17.5	15.0	2.5	6.25
2010	10.3	15.0	−4.7	22.09
2011	21.3	15.0	6.3	39.69
				$\sum_{i=1}^{6} (r_i - \bar{r})^2 = 137.16$

$$s_B = \sqrt{\frac{\sum_{i=1}^{6} (r_i - \bar{r})^2}{n-1}} = \sqrt{\frac{137.16}{6-1}} = \sqrt{27.432} = 5.24\%$$

Historical Returns and Risk We can now use the standard deviation as a measure of risk to view the historical (1900–2008) *international* investment return data in Table 4.9. Within each country, a close relationship exists between the average return and the standard deviation of different types of investments. Shares earn higher returns than bonds, and bonds earn higher returns than bills. Similarly, share returns are more volatile than bond returns, with bill returns displaying the least volatility (i.e. the lowest standard deviation). The general pattern is clear: investments with higher average returns have higher standard deviations. Because higher standard deviations are associated with greater risk, the historical data confirm the existence of a positive relationship between risk and return. This relationship reflects the fact that market participants require higher returns as compensation for greater risk.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 4.9 Historical Returns and Standard Deviations for Select International Asset Classes (1900–2008)

International Asset Class	United States		United Kingdom		Germany	
	Average Annual Return	Standard Deviation of Returns	Average Annual Return	Standard Deviation of Returns	Average Annual Return	Standard Deviation of Returns
Shares	11.2%	20.2%	11.2%	21.8%	13.2%	34.0%
Government bonds	5.5	8.3	6.0	11.9	4.9	13.2
Government bills	4.0	2.8	5.1	3.8	4.5	3.3
Inflation	3.1	4.9	4.2	6.6	5.6	15.1

(*Source:* Elroy Dimson, Paul Marsh and Mike Staunton 2002, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press, Princeton, Copyright © 2002. NJ. Reprinted by permission of Princeton University Press. *Additional updates provided by Dimson et al.*)

Assessing Risk

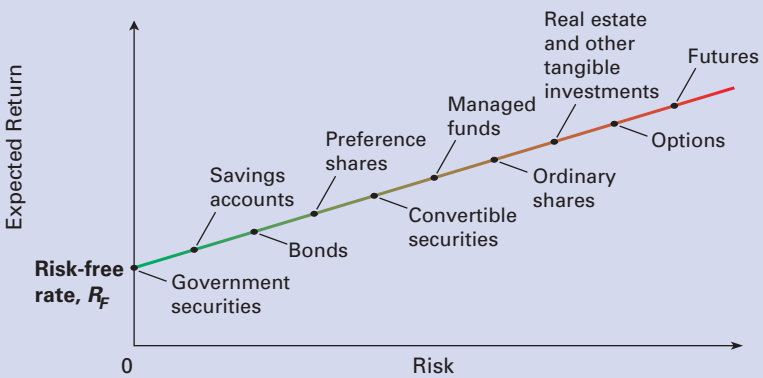
Techniques for quantifying the risk of a given investment vehicle, however, will be of little use if you are unaware of your feelings towards risk. Individual investors typically tend to seek answers to these questions: 'Is the amount of perceived risk worth taking to get the expected return?' 'Can I get a higher return for the same level of risk or a lower risk for the same level of return?' A look at the general risk–return characteristics of alternative investment vehicles and the question of an acceptable level of risk will help to shed light on how to evaluate risk.

Risk–Return Characteristics of Alternative Investment Vehicles A wide variety of risk–return behaviours are associated with each type of investment vehicle. Some shares offer low returns and low risk; others offer high returns and high risk. A very rough generalisation of the risk–return characteristics of the main investment vehicles appears in Figure 4.2. Of course, a broad range of risk–return behaviours exists for specific investments of each type. In other words, once the appropriate type of vehicle has been selected, the investor must still decide which specific security or property to acquire. In Chapter 5 a quantitative technique for linking risk and return will be presented.

FIGURE 4.2

Risk–Return Tradeoffs for Various Investment Vehicles

A risk–return tradeoff exists such that for a higher risk one expects a higher return, and vice versa. Low-risk–low-return investment vehicles include government securities and savings accounts. High-risk–high-return vehicles include real estate and other tangible investments, options and futures.



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

risk-indifferent
describes an investor who does not require a change in return as compensation for greater risk.

risk-averse
describes an investor who requires greater return in exchange for greater risk.

risk-seeking
describes an investor who will accept a lower return in exchange for greater risk.

An Acceptable Level of Risk The three basic risk preference behaviours (risk-indifferent, risk-averse and risk-seeking) are depicted graphically in Figure 4.3.

- For the **risk-indifferent** investor, the required return does not change as risk goes from x_1 to x_2. In essence, no change in return would be required for the increase in risk.
- For the **risk-averse** investor, the required return increases for an increase in risk. Because they do not like risk, these investors require higher expected returns to compensate them for taking greater risk.
- For the **risk-seeking** investor, the required return decreases for an increase in risk. Theoretically, because they enjoy risk, these investors are willing to give up some return to take more risk.

Most investors are risk-averse: for a given increase in risk, they require an increase in return, as illustrated in Figure 4.3.

Of course, the amount of return required by each investor for a given increase in risk differs depending on the investor's degree of risk aversion. A very risk-averse investor requires a great deal of compensation to take on additional risk, meaning that the green line in the figure would be very steep for such a person. Someone who is less risk-averse does not require as much compensation to be persuaded to accept risk, so for that sort of person the green line would be flatter.

Steps in the Decision Process: Combining Return and Risk

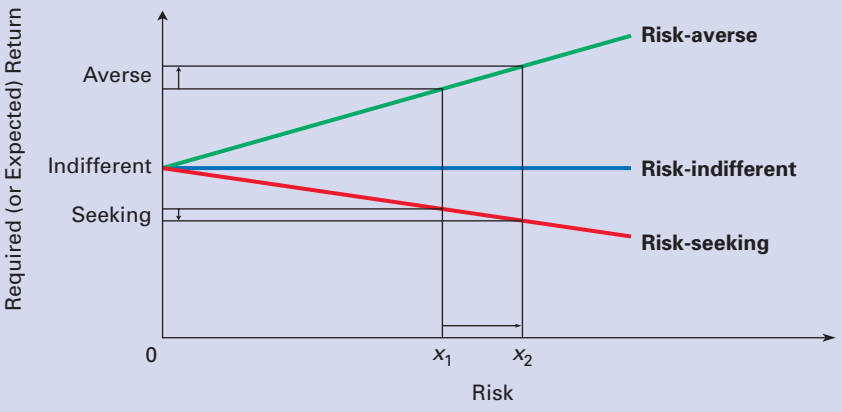
When deciding between alternative investments you should take the following steps to combine return and risk.

1. Using historical or projected return data, estimate the expected return over a given holding period. Use yield (or present-value) techniques to make sure you give the time value of money adequate consideration.
2. Using historical or projected return data, assess the risk associated with the investment. Subjective risk assessment, use of the standard deviation and the use of other measures such as beta (see Chapter 5) are the primary approaches available to individual investors.

FIGURE 4.3

Risk Preferences

The risk-indifferent investor requires no change in return for a given increase in risk. The risk-averse investor requires an increase in return for a given risk increase. The risk-seeking investor gives up some return for more risk. The majority of investors are risk-averse.



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

3. Evaluate the risk–return behaviour of each alternative investment to make sure that the return expected is reasonable given the level of risk. If other vehicles with lower (or equal) levels of risk provide equal (or greater) returns, the investment is not acceptable.
4. Select the investment vehicles that offer the highest returns associated with the level of risk you are willing to take. As long as you get the highest return for your acceptable level of risk, you have made a 'good investment'.

Probably the most difficult step in this process is assessing risk. Aside from return and risk considerations, other factors, such as taxes, liquidity and portfolio considerations, affect the investment decision. We will develop portfolio concepts in Chapter 5 and, in later chapters, will look at all of these factors as they are related to specific investment vehicles.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

4.9 Define *risk*. Explain what we mean by the *risk–return tradeoff*. What happens to the required return as risk increases? Explain.

4.10 Define and briefly discuss each of the following sources of risk.

a. Business risk
b. Financial risk
c. Purchasing power risk
d. Interest rate risk
e. Liquidity risk
f. Tax risk
g. Market risk
h. Event risk

4.11 Briefly describe standard deviation as a measure of risk or variability.

4.12 Differentiate among the three basic risk preferences: risk-indifferent, risk-averse and risk-seeking. Which of these behaviours best describes most investors?

4.13 Describe the steps involved in the investment process. Be sure to mention how returns and risks can be evaluated together to determine acceptable investments.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know	Key Terms
LG 1 Review the concept of return, its importance, the forces that affect the investor's level of return, and historical returns. Return is the reward for investing. The total return provided by an investment includes income and capital gains (or losses). Return is commonly calculated on a historical basis and then used to project expected returns. The level of return depends on internal characteristics and external forces, which include the general level of price changes. Significant differences exist among the average annual rates of return realised over time on various types of security investments.	deflation, *p. 92* expected return, *p. 90* income, *p. 89* inflation, *p. 92* return, *p. 89* total return, *p. 90*
LG 2 Discuss the role of time value of money in measuring return and defining a satisfactory investment. Because investors have opportunities to earn interest on their funds, money has a time value. Time value concepts should be considered when making investment decisions. Financial calculators and electronic spreadsheets can be used to streamline time value calculations. A satisfactory investment is one for which the present value of its benefits equals or exceeds the present value of its costs.	satisfactory investment, *p. 93*
LG 3 Describe real, risk-free and required returns yield and the calculation and application of holding period return (internal rate of return) and growth rates. The required return is the rate of return an investor must earn to be fully compensated for an investment's risk. It represents the sum of the real rate of return and the expected inflation premium (which together represent the risk-free rate), plus the risk premium. The risk premium varies depending on issue and issuer characteristics. The holding period return (HPR) is the return earned over a specified period of time. It is frequently used to compare returns earned in periods of one year or less.	expected inflation premium, *p. 95* holding period, *p. 96* holding period return (HPR), *p. 97* paper return, *p. 96* real rate of return, *p. 95* realised return, *p. 96* required return, *p. 95* risk-free rate, *p. 95* risk premium, *p. 95*
LG 4 Explain the concept and the calculation of yield, and how to find growth rates. Yield (or internal rate of return) is the compound annual rate of return earned on investments held for more than one year. If the yield is greater than or equal to the required return, the investment is acceptable. The concept of yield assumes that the investor will be able to earn interest at the calculated yield rate on all income from the investment. Present-value techniques can be used to find a rate of growth, which is the compound annual rate of change in the value of a stream of income, particularly dividends or earnings.	fully compounded rate of return, *p. 101* rate of growth, *p. 101* reinvestment rate, *p. 100* yield (internal rate of return), *p. 98*
LG 4 Discuss the key sources of risk that might affect potential investment vehicles. Risk is the chance that the actual return from an investment will differ from what is expected. Total risk results from a combination of sources: business, financial, purchasing power, interest rate, liquidity, tax, market and event risk. These risks have varying effects on different types of investments. The combined impact of any of the sources of risk in a given investment vehicle would be reflected in its risk premium.	business risk, *p. 103* event risk, *p. 105* financial risk, *p. 103* interest rate risk, *p. 104* liquidity risk, *p. 104* purchasing power risk, *p. 104* risk, *p. 103* risk–return tradeoff, *p. 103* tax risk, *p. 105*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 6 **Understand the risk of a single asset, risk assessment, and the steps that combine return and risk.** The standard deviation measures the absolute risk of both single assets and portfolios of assets. Investors require higher returns as compensation for greater risk. Generally, each type of investment vehicle displays certain risk–return characteristics. Most investors are risk-averse: for a given increase in risk, they require an increase in return. Investors estimate the return and risk of each alternative and then select investments that offer the highest returns for the level of acceptable risk.	market risk, *p. 105* risk-averse, *p. 109* risk-indifferent, *p. 109* risk-seeking, *p. 109* standard deviation, *s*, *p. 106*

Discussion Questions

LG 1

Q4.1 Choose a publicly traded company that has been listed on the ASX for at least five years. Use any data source of your choice to find the annual cash dividend, if any, paid by the company in each of the past five calendar years. Also find the closing price of the shares at the end of each of the preceding six years.

a. Calculate the return for each of the five one-year periods.
b. Graph the returns on a set of year (*x*-axis)–return (*y*-axis) axes.
c. On the basis of the graph in part **b**, estimate the return for the coming year, and explain your answer.

LG 2

Q4.2 Estimate the amount of cash you will need each year over the next 20 years to live at the standard you desire. Also estimate the rate of return you can reasonably expect to earn annually, on average, during that 20-year period by investing in an ASX portfolio similar to the ASX 200.

a. How large a single lump sum would you need today to provide the annual cash required to allow you to live at the desired standard over the next 20 years? (*Hint:* Be sure to use the appropriate discount rate.)
b. Would the lump sum calculated in part **a** be larger or smaller if you could earn a higher return during the 20-year period? Explain.
c. If you had the lump sum calculated in part **a** but decided to delay your planned retirement in 20 years for another three years, how much extra cash would you have accumulated over the three-year period if you could invest it to earn a 7% annual rate of return?

LG 4

Q4.3 Access appropriate estimates of the expected inflation rate over the next year, and the current yield on one-year risk-free securities (the yield on these securities is referred to as the *nominal* rate of interest). Use the data to estimate the current risk-free *real* rate of interest.

LG 3 LG 6

Q4.4 Choose three ASX-listed shares and maintain a record of their dividend payments, if any, and closing prices each week over the next six weeks.

a. At the end of the six-week period, calculate the one-week holding period returns (HPRs) for each share for each of the six weeks.
b. For each share, average the six weekly HPRs calculated in part **a** and compare them.
c. Use the averages you computed in part **b** and compute the standard deviation of the six HPRs for each share. Discuss the shares' relative risk and return behaviour. Did the shares with the highest risk earn the greatest return?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG1 **P4.1** How much would an investor earn on a share purchased one year ago for $63 if it paid an annual cash dividend of $3.75 and had just been sold for $67.50? Would the investor have experienced a capital gain? Explain.

LG1 **P4.2** An investor buys a bond for $10 000. The bond pays $300 interest every six months. After 18 months, the investor sells the bond for $9500. Describe the types of income and/or loss the investor had.

LG1 **P4.3** Assuming you purchased a share for $50 one year ago, sold it today for $60, and during the year received three dividend payments totalling $2.70, calculate the following.

- **a.** Income
- **b.** Capital gain (or loss)
- **c.** Total return:
  - **i.** In dollars
  - **ii.** As a percentage of the initial investment

LG1 **P4.4** Assume you purchased a bond for $9500. The bond pays $300 interest every six months. You sell the bond after 18 months for $10 000. Calculate the following:

- **a.** Income
- **b.** Capital gain or loss
- **c.** Total return in dollars and as a percentage of the original investment

LG1 **P4.5** Consider the historical data given in the accompanying table.

- **a.** Calculate the total return (in dollars) for each year.
- **b.** Indicate the level of return you would expect in 2012 and in 2013.
- **c.** Comment on your forecast.

		Market Value (Price)	
Year	Income	Beginning	Ending
2007	$1.00	$30.00	$32.50
2008	1.20	32.50	35.00
2009	1.30	35.00	33.00
2010	1.60	33.00	40.00
2011	1.75	40.00	45.00

LG1 **P4.6** Refer to the table in Problem 4.5. What is the total return in dollars and as a percentage of your original investment if you purchased 100 shares of the investment at the beginning of 2007 and sold it at the end of 2009?

LG3 **P4.7** Given a real rate of interest of 3%, an expected inflation premium of 5%, and risk premiums for investments A and B of 3% and 5%, respectively, find the following.

- **a.** The risk-free rate of return R_F
- **b.** The required returns for investments A and B

LG3 **P4.8** The risk-free rate is 7% and expected inflation is 4.5%. If inflation expectations change such that future expected inflation rises to 5.5%, what will the new risk-free rate be?

LG3 **P4.9** Calculate the holding period return (HPR) for the two investment alternatives given on page 114. Which, if any, of the return components is likely not to be realised if you continue to hold each of the investments beyond one year? Which vehicle would you prefer, assuming they are of equal risk? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

	Investment Vehicle	
	X	Y
Cash received		
1st quarter	$1.00	$0
2nd quarter	1.20	0
3rd quarter	0	0
4th quarter	2.30	2.00
Investment value		
End of year	$29.00	$56.00
Beginning of year	30.00	50.00

LG3 **P4.10** You are considering two investment alternatives. The first is a share that pays quarterly dividends of $0.50 per share and is trading at $25 per share; you expect to sell in six months for $27. The second is a share that pays quarterly dividends of $0.60 per share and is trading at $27 per share; you expect to sell in one year for $30. Which share will provide the better annualised holding period return?

LG3 **P4.11** You are considering purchasing a bond that pays annual interest of $50 per $1000 of par value. The bond matures in one year, when you will collect the par value and the interest payment. If you can purchase this bond for $950, what is the holding period return?

LG4 **P4.12** Assume you invest $5000 today in an investment that promises to return $9000 in exactly 10 years.

a. Use the present-value technique to estimate the yield on this investment.

b. If a minimum return of 9% is required, would you recommend this investment?

LG4 **P4.13** You invest $7000 in shares and receive $65, $70, $70 and $65 in dividends over the following four years. At the end of the four years, you sell the shares for $7900. What was the yield on this investment?

LG4 **P4.14** Your friend asks you to invest $10 000 in a business venture. Based on your estimates, you would receive nothing for four years, at the end of year 5 you would receive interest on the investment compounded annually at 8%, and at the end of year 6 you would receive $14 500. If your estimates are correct, what would be the yield on this investment?

LG4 **P4.15** Use a financial calculator or an Excel spreadsheet to estimate the yield for each of the following investments.

Investment	Initial Investment	Future Value	End of the Year
A	$ 1 000	$ 1 200	5
B	10 000	20 000	7
C	400	2 000	20
D	3 000	4 000	6
E	5 500	25 000	30

LG4 **P4.16** Sara Holliday must earn a return of 10% on an investment that requires an initial outlay of $2500 and promises to return $6000 in eight years.

a. Use present-value techniques to estimate the yield on this investment.

b. On the basis of your finding in part **a**, should Sara make the proposed investment? Explain.

LG4 **P4.17** Use a financial calculator or an Excel spreadsheet to estimate the yield for each of the two investments given on page 115.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

	Investment	
	A	B
Initial Investment	$8500	$9500
End of Year	Income	
1	$2500	$2000
2	2500	2500
3	2500	3000
4	2500	3500
5	2500	4000

LG4 **P4.18** Elliott Dumack must earn a minimum rate of return of 11% to be adequately compensated for the risk of the following investment.

Initial Investment	$14 000
End of Year	Income
1	$6 000
2	3 000
3	5 000
4	2 000
5	1 000

a. Use present-value techniques to estimate the yield on this investment.
b. On the basis of your finding in part **a**, should Elliott make the proposed investment? Explain.

LG4 **P4.19** Assume that an investment generates the following income stream and can be purchased at the beginning of 2011 for $1000 and sold at the end of 2017 for $1200. Estimate the yield for this investment. If a minimum return of 9% is required, would you recommend this investment? Explain.

End of Year	Income Stream
2011	$140
2012	120
2013	100
2014	80
2015	60
2016	40
2017	20

LG4 **P4.20** For each of the following streams of dividends, estimate the compound annual rate of growth between the earliest year for which a value is given and 2011.

	Dividend Stream		
Year	A	B	C
2002		$1.50	
2003		1.55	
2004		1.61	
2005		1.68	$2.50
2006		1.76	2.60
2007	$5.00	1.85	2.65
2008	5.60	1.95	2.65
2009	6.40	2.06	2.80
2010	7.20	2.17	2.85
2011	8.00	2.28	2.90

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG 4 **P4.21** A company paid dividends of $1.00 per share in 2003, and just announced that it will pay $2.21 in 2010. Estimate the compound annual growth rate of the dividends.

LG 4 **P4.22** A company reported net income in 2006 of $350 million. In 2010, the company expects net income to be $441.7 million. Estimate the annual compound growth rate of net income.

LG 6 **P4.23** The historical returns for two investments—A and B—are summarised in the table below for the period 2007 to 2011. Use the data to answer the questions that follow.

	Investment	
	A	B
Year	Rate of Return	%
2007	19	8
2008	1	10
2009	10	12
2010	26	14
2011	4	16
Average	12%	12%

a. On the basis of a review of the return data, which investment appears to be more risky? Why?
b. Calculate the standard deviation for each investment's returns.
c. On the basis of your calculations in part **b**, which investment is more risky? Compare this conclusion to your observation in part **a**.

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 4.1 COATES' DECISION

LG 2 LG 4 Dave Coates, a 23-year-old mathematics school teacher, recently received a tax refund of $1100. Because Dave didn't need this money for his current living expenses, he decided to make a long-term investment. After surveying a number of alternative investments costing no more than $1100, Dave isolated two that seemed most suitable to his needs.

Each of the investments cost $1050 and was expected to provide income over a 10-year period. Investment A provided a relatively certain stream of income. Dave was a little less certain of the income provided by investment B. From his search for suitable alternatives, Dave found that the appropriate discount rate for a relatively certain investment was 12%. Because he felt a bit uncomfortable with an investment like B, he estimated that such an investment would have to provide a return of at least 4% *higher* than investment A. Although Dave planned to reinvest funds returned from the investments in other vehicles providing similar returns, he wished to keep the extra $50 ($1100 – $1050) invested for the full 10 years in a savings account paying 5% interest compounded annually.

As he makes his investment decision, Dave has asked for your help in answering the questions that follow the expected return data for these investments.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

	Expected Returns	
Year	A	B
2011	$150	$100
2012	150	150
2013	150	200
2014	150	250
2015	150	300
2016	150	350
2017	150	300
2018	150	250
2019	150	200
2020	1150	150

QUESTIONS

1. Assuming that investments A and B are equally risky and using the 12% discount rate, apply the present-value technique to assess the acceptability of each investment and to determine the preferred investment. Explain your findings.
2. Recognising that investment B is more risky than investment A, reassess the two alternatives, adding the 4% risk premium to the 12% discount rate for investment A and therefore applying a 16% discount rate to investment B. Compare your findings relative to acceptability and preference to those found for question **1**.
3. From your findings in questions **1** and **2**, indicate whether the yield for investment A is above or below 12% and whether that for investment B is above or below 16%. Explain.
4. Use the present-value technique to estimate the yield on each investment. Compare your findings and contrast them with your response to question **3**.
5. From the information given, which, if either, of the two investments would you recommend that Dave make? Explain your answer.
6. Indicate to Dave how much money the extra $50 will have grown to by the end of 2018, assuming he makes no withdrawals from the savings account.

Case Problem 4.2 THE RISK–RETURN TRADEOFF: MOLLY O'ROURKE'S SHARE PURCHASE DECISION

LG3 LG6 Over the past 10 years, Molly O'Rourke has slowly built a diversified portfolio of shares. Currently her portfolio includes 20 different share issues and has a total market value of $82 500.

Molly is at present considering the addition of 50 shares of one of two share issues—X or Y. To assess the return and risk of each of these issues, she has gathered dividend income and share price data for both over each of the last 10 years (2001–2010). Molly's investigation of the outlook for these issues suggests that each will, on average, tend to behave in the future just as it has in the past. She therefore believes that the expected return can be estimated by finding the average holding period return (HPR) over the past 10 years for each of the shares. The historical dividend income and share price data collected by Molly are given in the table on page 118.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

	Share X			Share Y		
		Share Price			Share Price	
Year	Dividend Income	Beginning	Ending	Dividend Income	Beginning	Ending
2001	$1.00	$20.00	$22.00	$1.50	$20.00	$20.00
2002	1.50	22.00	21.00	1.60	20.00	20.00
2003	1.40	21.00	24.00	1.70	20.00	21.00
2004	1.70	24.00	22.00	1.80	21.00	21.00
2005	1.90	22.00	23.00	1.90	21.00	22.00
2006	1.60	23.00	26.00	2.00	22.00	23.00
2007	1.70	26.00	25.00	2.10	23.00	23.00
2008	2.00	25.00	24.00	2.20	23.00	24.00
2009	2.10	24.00	27.00	2.30	24.00	25.00
2010	2.20	27.00	30.00	2.40	25.00	25.00

QUESTIONS

1. Determine the holding period return (HPR) for each share in each of the preceding 10 years. Find the expected return for each share, using the approach specified by Molly.
2. Use the HPRs and expected return calculated in question **1** to find the standard deviation of the HPRs for each share over the 10-year period 2001–2010.
3. Use your findings to evaluate and discuss the return and risk associated with shares X and Y. Which share seems preferable? Explain.
4. Ignoring her existing portfolio, what recommendations would you give Molly with regard to shares X and Y?

Excel with Spreadsheets

From her Investment Analysis class, Laura has been given an assignment to evaluate several securities on a risk–return tradeoff basis. The specific securities to be researched are International Machines (IM) and Helmer & Payne (HP). She finds the following data on the securities in question. It is as follows:

Year	2005	2006	2007	2008	2009	2010
$Price_{IM}$	$49.38	$91.63	$112.25	$112.00	$107.89	$ 92.68
$Dividend_{IM}$	$ 0.40	$ 0.44	$ 0.48	$ 0.52	$ 0.56	$ 0.64
$Price_{HP}$	$25.56	$17.56	$ 23.50	$ 47.81	$ 30.40	$ 27.93
$Dividend_{HP}$	$ 0.28	$ 0.28	$ 0.28	$ 0.30	$ 0.30	$ 0.32
Value	980.3	1279.6	1394.6	1366.0	1130.2	1121.8

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Questions

Part One

1. Use the data that Laura has found on the three securities and **create a spreadsheet** to calculate the holding period return (HPR) for each year and the average return over a five-year period. Specifically, the HPR will be based upon five unique periods of one year (i.e. 2005 to 2006, 2006 to 2007, 2007 to 2008, 2008 to 2009, 2009 to 2010). Use the following formula:

$$HPR = [Inc + V_n - V_0)] \div V_0$$

where

Inc = income during period
V_n = ending investment value
V_0 = beginning investment value

Part Two

Create a spreadsheet which can be viewed at www.pearson.com.au/myfinancelab, in order to evaluate the risk–return tradeoff.

2. Calculate the standard deviations of the returns for IM and HP.
3. Based on your answer in part **2** and your results for the average return and the standard deviation, what conclusions can Laura make about investing in either IM or HP?

Risk and return are two common themes that run through all aspects of finance. As an investor, you need to know how to calculate return, including both historical and expected returns. It is also important to be aware of your personal risk tolerance and of the potential return you can earn by accepting this risk: the risk–return tradeoff. The Web is a valuable source of objective measures for discovering or clarifying an investor's tolerance for risk. It also has excellent sources of data for obtaining or calculating historical returns. The following websites offer information related to risk and return.

WEBSITE	URL
Cannex	www.canstar.com.au
The Intelligent Investor	www.afrintelligentinvestor.com.au
Lincoln Indicators	www.lincolnindicators.com.au
Risk Profiling	www.riskprofiling.com
ShareAnalysis	www.shareanalysis.com.au
Vanguard Investments	www.vanguard.com.au
Yahoo!7 Finance	http://au.finance.yahoo.com

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

APPENDIX

4A The Time Value of Money

Imagine that at age 25 you begin making annual cash deposits of $1000 into a savings account that pays 5% annual interest. After 40 years, at age 65, you will have made deposits totalling $40 000 (40 years × $1000 per year). Assuming you made no withdrawals, what do you think your account balance will be—$50 000? $75 000? $100 000? The answer is none of the above. Your $40 000 will have grown to nearly $121 000! Why? Because the time value of money allows the deposits to earn interest, and that interest also earns interest over the 40 years. **Time value of money** refers to the fact that as long as an opportunity exists to earn interest, the value of money is affected by the point in time when the money is received.

time value of money
a term referring to the fact that as long as an opportunity exists to earn interest, the value of money is affected by the point in time when the money is received.

Interest: The Basic Return to Savers

A savings account at a bank is one of the most basic forms of investment. The saver receives interest in exchange for placing idle funds in an account. **Interest** can be viewed as the 'rent' paid by a borrower for use of the lender's money. The saver will experience neither a capital gain nor a capital loss, because the value of the investment (the initial deposit) will change only by the amount of interest earned. For the saver, the interest earned over a given time frame is that period's income.

interest
the 'rent' paid by a borrower for use of the lender's money.

Simple Interest

The income paid on investment vehicles that pay interest (such as cash deposits and bonds) is most often calculated using **simple interest**—interest paid only on the initial deposit for the amount of time it is held. For example, if you held a $100 initial deposit in an account paying 6% interest for 1½ years, you would earn $9 in interest (1½ × 0.06 × $100) over this period. Had you withdrawn $50 at the end of half a year, the total interest earned over the 1½ years would be $6. You would earn $3 interest on $100 for the first half-year (½ × 0.06 × $100) and $3 interest on $50 for the next full year (1 × 0.06 × $50).

simple interest
interest paid only on the initial deposit for the amount of time it is held.

When an investment earns simple interest, the stated rate of interest is the **true rate of interest** (**return**). This is the actual rate of interest earned. In the foregoing example, the true rate of interest is 6%. Because the interest rate reflects the rate at which current income is earned regardless of the size of the deposit, it is a useful measure of current income.

true rate of interest
the actual rate of interest earned.

Compound Interest

Compound interest is interest paid not only on the initial deposit but also on any interest accumulated from one period to the next. This is the method typically used by savings institutions. When interest is compounded annually over a single year, compound

compound interest
interest paid not only on the initial deposit but also on any interest accumulated from one period to the next.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

and simple interest calculations provide similar results. In such a case, the stated interest rate and the true interest rate are equal.

The data in Table 4A.1 illustrate compound interest. In this case, the interest earned each year is left on deposit rather than withdrawn. The $50 of interest earned on the $1000 initial deposit during 2010 becomes part of the beginning (initial) balance on which interest is paid in 2011, and so on. *Note that simple interest is used in the compounding process;* that is, interest is paid only on the initial balance held during the given time period.

When an investment earns compound interest, the stated and true interest rates are equal only when interest is compounded annually. In general, *the more frequently interest is compounded at a stated rate, the higher the true rate of interest.*

The interest calculations for the deposit data in Table 4A.1, assuming that interest is compounded semi-annually (twice a year), are shown in Table 4A.2. The interest for each six-month period is found by multiplying the beginning (initial) balance for the six months by half of the stated 5% interest rate (see column 3 of Table 4A.2). You can see that larger returns are associated with more frequent compounding: compare the end-of-2012 account balance at 5% compounded annually with the end-of-2012 account balance at 5% compounded semi-annually. The semi-annual compounding results in a higher balance ($1879.19 versus $1876.88). Clearly, with semi-annual compounding, the true rate of interest is greater than the 5% annually compounded rate. Table 4A.3 (on page 122) shows the true rates of interest associated with a 5% stated rate and various compounding frequencies.

continuous compounding an interest calculation in which interest is compounded over the smallest possible interval of time.

Continuous compounding calculates interest by compounding over the smallest possible interval of time. It results in the maximum true rate of interest that can be achieved with a given stated rate of interest. Table 4A.3 shows that the more frequently interest is compounded, the higher the true rate of interest. Because of the impact that differences in compounding frequencies have on return, you should evaluate the true rate of interest associated with various alternatives before making a deposit.

TABLE 4A.1 Savings Account Balance Data (5% interest compounded annually)

EXCEL With Spreadsheets

Date	(1) Deposit (Withdrawal)	(2) Beginning Account Balance	(3) 0.05 × (2) Interest for Year	(4) (2) + (3) Ending Account Balance
1/1/10	$1000	$1000.00	$50.00	$1050.00
1/1/11	(300)	750.00	37.50	$787.50
1/1/12	1000	1787.50	89.38	$1876.88

TABLE 4A.2 Savings Account Balance Data (5% interest compounded semi-annually)

EXCEL With Spreadsheets

Date	(1) Deposit (Withdrawal)	(2) Beginning Account Balance	(3) 0.05 × (2) Interest for 6 Months	(4) (2) + (3) Ending Account Balance
1/1/10	$1000	$1000.00	$25.00	$1025.00
1/1/10		1025.00	25.63	1050.63
1/1/11	(300)	750.00	18.77	769.40
1/1/11		769.40	19.24	788.64
1/1/12	1000	1788.64	44.72	1833.36
1/1/12		1833.36	45.83	1879.19

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 4A.3 True Rate of Interest for Various Compounding Frequencies (5% stated rate of interest)

Compounding Frequency	True Rate of Interest	Compounding Frequency	True Rate of Interest
Annually	5.000%	Monthly	5.120%
Semi-annually	5.063	Weekly	5.125
Quarterly	5.094	Continuously	5.127

Computational Aids for Use in Time Value Calculations

Time-consuming calculations are often involved in adjusting for the time value of money. Although you should understand the concepts and mathematics underlying these calculations, the application of time value techniques can be streamlined. We will demonstrate the use of financial calculators and spreadsheets as computational aids.

Financial Calculators

We can also use financial calculators for time value computations. Generally, *financial calculators* include numerous preprogrammed financial routines. Throughout this book, we show the keystrokes for various financial computations.

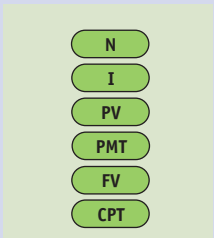
We focus primarily on the keys pictured and defined in Figure 4A.1. We typically use four of the five keys in the left column, plus the compute (**CPT**) key. One of the four keys represents the unknown value being calculated. (Occasionally, all five of the keys are used, with one representing the unknown value.) The keystrokes on some of the more sophisticated calculators are menu-driven: after you select the appropriate routine, the calculator prompts you to input each value; on these calculators, a compute key is not needed to obtain a solution. Regardless, any calculator with the basic time value functions can be used in lieu of financial tables. The keystrokes for other financial calculators are explained in the reference guides that accompany them.

Once you understand the basic underlying concepts, you probably will want to use a calculator to streamline routine financial calculations. With a little practice, you can increase both the speed and the accuracy of your financial computations. Note that because of a calculator's greater precision, slight differences are likely to exist between values calculated by using financial tables and those found with a financial calculator.

FIGURE 4A.1

Calculator Keys

Important financial keys on the typical calculator.



N — Number of periods
I — Interest rate per period
PV — Present value
PMT — Amount of payment (used only for annuities)
FV — Future value
CPT — Compute key used to initiate financial calculation once all values are input

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

TIME IS ON YOUR SIDE—It's never too early to begin saving for retirement, even if it seems a long way off. The power of compounding—which Albert Einstein once called the 'eighth wonder of the world'—will multiply your funds considerably. If you began today and saved $2000 per year for just the next eight years into an account that earned 10% per year and left those funds on deposit until the end of 40 years, that $16 000 would grow to more than $480 000. You can wait, but it will cost you. Time is your biggest investment ally.

Remember that *conceptual understanding of the material is the objective*. An ability to solve problems with the aid of a calculator does not necessarily reflect such an understanding, so don't just settle for answers. Work with the material until you are sure you also understand the concepts.

Computers and Spreadsheets

Like financial calculators, computers and spreadsheets have built-in routines that simplify time value calculations. We provide in the text a number of spreadsheet solutions that identify the cell entries for calculating time values. The value for each variable is entered in a cell in the spreadsheet, and the calculation is programmed using an equation that links the individual cells. If you change values of the variables, the solution automatically changes. In the spreadsheet solutions in this book, we show at the bottom of the spreadsheet the equation that determines the calculation.

The ability to use spreadsheets has become a prime skill for today's investors. As the saying goes, 'Get aboard the bandwagon, or get run over'. The spreadsheet solutions we present in this book will help you climb up onto that bandwagon!

We now turn to the key time value concepts, beginning with future value.

Future Value: An Extension of Compounding

future value
the amount to which a current deposit will grow over a period of time when it is placed in an account paying compound interest.

Future value is the amount to which a current deposit will grow over a period of time when it is placed in an account paying compound interest. Consider a deposit of $1000 that is earning 8% (0.08 in decimal form) compounded annually. The following calculation yields the future value of this deposit at the end of one year.

Equation 4A.1

$$\text{Future value at end of year 1} = \$1000 \times (1 + 0.08) = \underline{\underline{\$1080}}$$

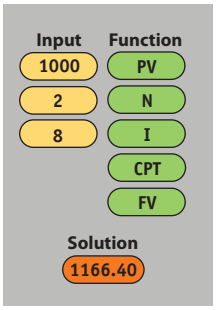
If the money were left on deposit for another year, 8% interest would be paid on the account balance of $1080. Thus, at the end of the second year, there would be $1166.40 in the account. This amount would represent the beginning-of-year balance of $1080 plus 8% of the $1080 ($86.40) in interest. The future value at the end of the second year would be calculated as follows.

Equation 4A.2

$$\text{Future value at end of year 2} = \$1080 \times (1 + 0.08) = \underline{\underline{\$1166.40}}$$

To find the future value of the $1000 at the end of year n, the procedure illustrated above would be repeated n times. Future values can be determined mathematically, by using a financial calculator or by a spreadsheet. Here we demonstrate use of a calculator and an Excel spreadsheet.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e



CALCULATOR USE* A financial calculator can be used to calculate** the future value directly. First punch in $1000 and depress **PV**; next punch in 2 and depress **N**; then punch in 8 and depress **I**.† Finally, to calculate the future value, depress **CPT** and then **FV**. The future value of $1166.40 should appear on the calculator display, as shown in the illustration on the left. On many calculators, this value will be preceded by a minus sign (−1166.40). *If a minus sign appears on your calculator, ignore it here as well as in all other 'Calculator Use' illustrations in this text.*‡

SPREADSHEET USE The future value of the single amount also can be calculated as shown on the following Excel spreadsheet.

annuity
a stream of equal cash flows that occur at equal intervals over time.

ordinary annuity
an annuity for which the cash flows occur at the end of each period.

	A	B
1	**FUTURE VALUE OF A SINGLE AMOUNT**	
2	Present value	$1000
3	Interest rate, pct per year compounded annually	8%
4	Number of years	2
5	Future value	$1166.40

Entry in Cell B5 is =FV(B3,B4,0,–B2,0).
The minus sign appears before B2 because the present value is an outflow (i.e. the initial deposit).

Future Value of an Annuity

An **annuity** is a stream of equal cash flows that occur at equal intervals over time. Receiving $1000 per year at the end of each of the next eight years is an example of an annuity. The cash flows can be *inflows* of returns earned from an investment or *outflows* of funds invested (deposited) to earn future returns.

Investors are sometimes interested in finding the future value of an annuity. Their concern is typically with what's called an **ordinary annuity**—one for which the cash flows occur at the *end* of each period. Here we can simplify our calculations by using a financial calculator or an Excel spreadsheet.

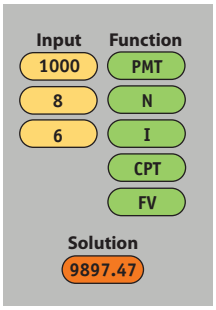
*Many calculators allow the user to set the number of payments per year. Most of these calculators are preset for monthly payments—12 payments per year. Because we work primarily with annual payments—one payment per year—it is important *to be sure that your calculator is set for one payment per year*. And although most calculators are preset to recognise that all payments occur at the end of the period, it is important *to make sure that your calculator is correctly set on the END mode*. Consult the reference guide that accompanies your calculator for instructions for setting these values.

**To avoid including previous data in current calculations, *always clear all registers of your calculator before inputting values and making each computation*.

†The known values *can be punched into the calculator in any order*. The order specified in this as well as other demonstrations of calculator use included in this text merely reflects convenience and personal preference.

‡The calculator differentiates inflows from outflows with a negative sign. For example, in the problem just demonstrated, the $1000 present value (**PV**), because it was keyed as a positive number (1000), is considered an inflow or deposit. Therefore, the calculated future value (**FV**) of –1166.40 is preceded by a minus sign to show that it is the resulting outflow or withdrawal. Had the $1000 present value been keyed in as a negative number (–1000), the future value of $1166.40 would have been displayed as a positive number (1166.40). Simply stated, *present value* (***PV***) *and future value* (***FV***) *cash flows will have opposite signs*.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e



CALCULATOR USE When using a financial calculator to find the future value of an annuity, we key in the annual deposit using the **PMT** key (rather than the **PV** key, which we used to find the future value of a single deposit). Use of the **PMT** key tells the calculator that a stream of **N** (the number of years input) end-of-year deposits in the amount of **PMT** dollars represents the deposit stream.

Using the calculator inputs shown on the left, we find the future value of the $1000, eight-year ordinary annuity earning a 6% annual rate of interest to be $9897.47.

SPREADSHEET USE We also can calculate the future value of the ordinary annuity as shown on the following Excel spreadsheet.

	A	B
1	**FUTURE VALUE OF AN ORDINARY ANNUITY**	
2	Annual payment	$1000
3	Annual rate of interest, compounded annually	6%
4	Number of years	8
5	Future value of an ordinary annuity	$9897.47

Entry in Cell B5 is =FV(B3,B4,–B2). The minus sign appears before B2 because the annual payment is a cash outflow.

Present Value: An Extension of Future Value

present value
the current value of a future sum.

Present value is the inverse of future value. That is, rather than measuring the value of a present amount at some future date, **present value** expresses the *current value of a future sum*. By applying present-value techniques, we can calculate the *value today* of a sum to be received at some future date.

When determining the present value of a future sum, we are answering the basic question, 'How much would have to be deposited today into an account paying *i*% interest in order to equal a specified sum to be received so many years in the future?' The applicable interest rate when we are finding present value is commonly called the **discount rate** (or *opportunity cost*). It represents the annual rate of return that could be earned currently on a similar investment.

discount rate
the annual rate of return that could be earned currently on a similar investment.

The basic present-value calculation is best illustrated using a simple example. Imagine that you are offered an opportunity that will provide you, one year from today, with exactly $1000. If you could earn 8% on similar types of investments, how much is the most you would pay for this opportunity? In other words, what is the present value of $1000 to be received one year from now, discounted at 8%? Letting x equal the present value, we can use Equation 4A.3 to describe this situation.

Equation 4A.3

$$x \times (1 + 0.08) = \$1000$$

Solving Equation 4A.3 for x, we get:

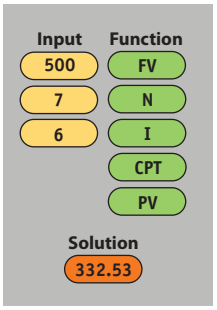
Equation 4A.4

$$x = \frac{\$1000}{(1 + 0.08)} = \underline{\underline{\$925.93}}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Thus, the present value of $1000 to be received one year from now, discounted at 8%, is $925.93. In other words, $925.93 deposited today into an account paying 8% interest will accumulate to $1000 in one year.

The calculations involved in finding the present value of sums to be received in the distant future are more complex than those for a one-year investment. Here we use a financial calculator or an Excel spreadsheet.



CALCULATOR USE Using the financial calculator inputs shown on the left, we find the present value of $500 to be received seven years from now, discounted at 6%, to be $332.53.

SPREADSHEET USE The present value of the single future amount also can be calculated as shown on the following Excel spreadsheet.

	A	B
1	PRESENT VALUE OF A SINGLE FUTURE AMOUNT	
2	Future value	$500
3	Interest rate, pct per year compounded annually	6%
4	Number of years	7
5	Present value	$332.53

Entry in Cell B5 is =–PV(B3,B4,0,B2).
The minus sign appears before PV to change the present value to a positive amount.

The Present Value of a Stream of Returns

In the preceding paragraphs we illustrated the technique for finding the present value of a single sum to be received at some future date. Because the returns from a given investment are likely to be received at *various* future dates rather than as a single lump sum, we also need to be able to find the present value of a *stream of returns*.

mixed stream
a stream of returns that exhibits no special pattern.

A stream of returns can be viewed as a package of single-sum returns; it may be classified as a mixed stream or an annuity. A **mixed stream** of returns is one that exhibits no special pattern. As noted earlier, an *annuity* is a stream of equal periodic returns. Table 4A.4 shows the end-of-year returns illustrating each of these types of patterns. To find the present value of each of these streams (measured at the *beginning* of 2011), we must calculate the total of the present values of the individual annual returns. Because shortcuts can be used for an annuity, we will illustrate calculation of the present value of each type of return stream separately (Table A4.5).

TABLE 4A.4 Mixed and Annuity Return Streams EXCEL With Spreadsheets

	Returns	
End of Year	Mixed Stream	Annuity
2011	$30	$50
2012	40	50
2013	50	50
2014	60	50
2015	70	50

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A4.5 Mixed-Stream Present-Value Calculation

EXCEL With Spreadsheets

Year	End of Year	(1) Income	(2) Present-Value Calculation at 9%	(3) Present Value at 9%
2011	1	$30	$30 ÷ (1 + 0.09)[1]	$ 27.52
2012	2	40	40 ÷ (1 + 0.09)[2]	$ 33.67
2013	3	50	50 ÷ (1 + 0.09)[3]	$ 38.61
2014	4	60	60 ÷ (1 + 0.09)[4]	$ 42.51
2015	5	70	70 ÷ (1 + 0.09)[5]	$ 45.50
			Total Present Value	$ 187.80

0.09 column (2) and (3) discount rate

Present Value of a Mixed Stream

To find the present value of the mixed stream of returns given in Table 4A.4, we must find and then total the present values of the individual returns. Assuming a 9% discount rate, we can streamline the calculation of the present value of the mixed stream using financial tables, a financial calculator or an Excel spreadsheet.

CALCULATOR USE You can use a financial calculator to find the present value of each individual return, as demonstrated on page 126. You then sum the present values to get the present value of the stream. However, most financial calculators have a function that allows you to punch in *all returns* (typically referred to as *cash flows*), specify the discount rate, and then directly calculate the present value of the entire return stream. Table 4A.5 shows the present value of each payment in the stream as well as the entire sum.

SPREADSHEET USE The present value of the mixed stream of returns also can be calculated as shown on the following Excel spreadsheet.

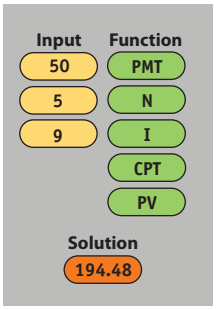
	A	B
1	PRESENT VALUE OF A MIXED STREAM OF RETURNS	
2	Discount Rate, pct/year	9%
3	Year	Year-End Return
4	1	$30
5	2	$40
6	3	$50
7	4	$60
8	5	$70
9	Present value	$187.80
	Entry in Cell B9 is =NPV(B2,B4:B8).	

Investing just under $188 would provide exactly a 9% return.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Present Value of an Annuity

We can find the present value of an annuity in the same way as the present value of a mixed stream. Fortunately, however, there are simpler approaches. Here we simplify our calculations by using either a financial calculator or an Excel spreadsheet.



CALCULATOR USE Using the calculator inputs shown on the left, we find the present value of the $50, five-year ordinary annuity of returns, discounted at a 9% annual rate, to be $194.48. (*Note:* Because the return stream is an annuity, the annual return is input using the **PMT** key rather than the **FV** key, which we used for finding the present value of a single return.) The value obtained with the calculator is slightly more accurate than the answer found using the table.

SPREADSHEET USE The present value of the annuity of returns also can be calculated as shown on the following Excel spreadsheet.

	A	B
1	PRESENT VALUE OF ANNUITY RETURNS	
2	Annual return	$50
3	Annual discount rate, compounded annually	9%
4	Number of years	5
5	Present value of an ordinary annuity	$194.48

Entry in Cell B5 is =PV(B3,B4,–B2).
The minus sign appears before B2 because the annual return is a cash outflow.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

4A.1 What is the *time value of money*? Explain why an investor should be able to earn a positive return.

4A.2 Define, discuss and contrast the following terms.

a. *Interest*
b. *Simple interest*
c. *Compound interest*
d. *True rate of interest* (or return)

4A.3 When interest is compounded more frequently than annually at a stated rate, what happens to the *true rate of interest*? Under what condition would the stated and true rates of interest be equal? What is *continuous compounding*?

4A.4 Describe, compare and contrast the concepts of *future value* and *present value*. Explain the role of the *discount rate* in calculating present value.

4A.5 What is an *annuity*? How can calculation of the future value of an annuity be simplified? What about the present value of an annuity?

4A.6 What is a *mixed stream* of returns? Describe the procedure used to find the present value of such a stream.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

Because investors have opportunities to earn interest on their funds, money has a time value. Interest can be applied using either simple interest or compound interest. The more frequently interest is compounded at a stated rate, the higher the true rate of interest. Financial tables, financial calculators, and computers and spreadsheets can be used to streamline time-value calculations. The future value of a present sum or an annuity can be found using compound interest concepts.

The present value of a future sum is the amount that would have to be deposited today, into an account earning interest at a given rate, to accumulate the specified future sum. The present value of streams of future returns can be found by adding the present values of the individual returns. When the stream is an annuity, its present value can be more simply calculated.

Key Terms

annuity, *p. 124*
compound interest, *p. 120*
continuous compounding, *p. 121*
discount rate, *p. 125*
future value, *p. 123*
interest, *p. 120*
mixed stream, *p. 126*
ordinary annuity, *p. 124*
present value, *p. 125*
simple interest, *p. 120*
time value of money, *p. 120*
true rate of interest (return), *p. 120*

Problems

All problems are available on **www.pearson.com.au/myfinancelab**

P4A.1 For each of the savings account transactions in the accompanying table, calculate the following.

a. End-of-year account balance. (Assume that the account balance at 31 December 2010 is zero.)

b. Annual interest, using 6% simple interest and assuming all interest is withdrawn from the account as it is earned.

c. True rate of interest, and compare it to the stated rate of interest. Discuss your finding.

Date	Deposit (Withdrawal)	Date	Deposit (Withdrawal)
1/1/11	$5000	1/1/13	$2000
1/1/12	(4000)	1/1/14	3000

P4A.2 Using a financial calculator or spreadsheet, calculate the following.

a. The future value of a $300 deposit left in an account paying 7% annual interest for 12 years.

b. The future value at the end of six years of an $800 *annual* end-of-year deposit into an account paying 7% annual interest.

P4A.3 For each of the following initial investment amounts, calculate the future value at the end of the given investment period if interest is compounded annually at the specified rate of return over the given investment period.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Investment	Investment Amount	Rate of Return	Investment Period
A	$ 200	5%	20 years
B	4 500	8	7
C	10 000	9	10
D	25 000	10	12
E	37 000	11	5

P4A.4 Using a financial calculator or spreadsheet, calculate the future value in two years of $10 000 invested today in an account that pays a stated annual interest rate of 12%, compounded monthly.

P4A.5 For each of the following annual deposits into an account paying the stated annual interest rate over the specified deposit period, calculate the future value of the *annuity* at the end of the given deposit period.

Deposit	Amount of Annual Deposit	Interest Rate	Deposit Period
A	$ 2 500	8%	10 years
B	500	12	6
C	1 000	20	5
D	12 000	6	8
E	4 000	14	30

P4A.6 If you deposit $1000 into an account at the end of each of the next five years, and the account pays an annual interest rate of 6%, how much will be in the account after five years?

P4A.7 If you could earn 9% on similar-risk investments, what is the least you would accept at the end of a six-year period, given the following amounts and timing of your investment?

a. Invest $5000 as a lump sum today.
b. Invest $2000 at the end of *each* of the next five years.
c. Invest a lump sum of $3000 today and $1000 at the end of *each* of the next five years.
d. Invest $900 at the end of years 1, 3 and 5.

P4A.8 For each of the following investments, calculate the present value of the future sum, using the specified discount rate and assuming the sum will be received at the end of the given year.

Investment	Future Sum	Discount Rate	End of Year
A	$ 7 000	12%	4
B	28 000	8	20
C	10 000	14	12
D	150 000	11	6
E	45 000	20	8

P4A.9 A corporate bond can be converted to $1000 at maturity eight years from purchase. If the bonds are to be competitive with other bonds, which pay 6% interest compounded annually, at what price will the corporate bonds sell, assuming they make no cash payments prior to maturity?

P4A.10 Referring to Problem 4A.9, at what price would the bond sell if bonds were paying 8% interest compounded annually? Compare your answer to your answer to the preceding problem.

P4A.11 How much should you be willing to pay for a lump sum of $10 000 five years from now if you can earn 3% every six months on other similar investments?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

P4A.12 Find the present value of each of the following streams of income, assuming a 12% discount rate.

A		B		C	
End of Year	Income	End of Year	Income	End of Year	Income
1	$2 200	1	$10 000	1–5	$10 000/yr
2	3 000	2–5	5 000/yr	6–10	8 000/yr
3	4 000	6	7 000		
4	6 000				
5	8 000				

P4A.13 Consider the streams of income given in the following table.
a. Find the present value of each income stream, using a 15% discount rate.
b. Compare the calculated present values and discuss them in light of the fact that the undiscounted total income amounts to $10 000 in each case.

	Income Stream	
End of Year	A	B
1	$ 4 000	$ 1 000
2	3 000	2 000
3	2 000	3 000
4	1 000	4 000
Total	$10 000	$10 000

P4A.14 For each of the investments below, calculate the present value of the *annual* end-of-year returns at the specified discount rate over the given period.

Investment	Annual Returns	Discount Rate	Period
A	$ 1 200	7%	3 years
B	5 500	12	15
C	700	20	9
D	14 000	5	7
E	2 200	10	5

P4A.15 Congratulations! You have won the lottery! Would you rather have $1 million at the end of each of the next 20 years or $15 million today? (Assume an 8% discount rate.)

P4A.16 Using a financial calculator or an Excel spreadsheet, calculate the following.
a. The present value of $500 to be received four years from now, using an 11% discount rate.
b. The present value of the following end-of-year income streams, using a 9% discount rate and assuming it is now the beginning of 2012.

End of Year	Income Stream A	Income Stream B
2012	$80	$140
2013	80	120
2014	80	100
2014	80	80
2016	80	60
2017	80	40
2018	80	20

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

P4A.17 Terri Alless has an opportunity to make any of the following investments. The purchase price, the amount of its lump-sum future value and its year of receipt are given below for each investment. Terri can earn a 10% rate of return on investments similar to those currently under consideration. Evaluate each investment to determine whether it is satisfactory and make an investment recommendation to Terri.

Investment	Purchase Price	Future Value	Year of Receipt
A	$18 000	$30 000	5
B	600	3 000	20
C	3 500	10 000	10
D	1 000	15 000	40

P4A.18 Kent Weitz wishes to assess whether the following two investments are satisfactory. Use his required return (discount rate) of 17% to evaluate each investment. Make an investment recommendation to Kent.

	Investment	
	A	B
Purchase price	$13 000	$8500
End of Year	Income Stream	
1	$2500	$4000
2	3500	3500
3	4500	3000
4	5000	1000
5	5500	500

P4A.19 You purchased a car using some cash and borrowing $15 000 (the present value) for 50 months at 12% per year. Calculate the monthly payment (annuity).

P4A.20 Referring to Problem 4A.19, assume you have made 10 payments. What is the balance (present value) of your loan?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER 5

Modern Portfolio Concepts

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Understand portfolio management and the procedures used to calculate the return and standard deviation of a portfolio.
- LG2 Discuss the concepts of correlation and diversification, and the effectiveness, methods and benefits of international diversification.
- LG3 Describe the components of risk and the use of beta to measure risk.
- LG4 Explain the capital asset pricing model (CAPM)—conceptually, mathematically and graphically.
- LG5 Review the traditional and modern approaches to portfolio management.
- LG6 Describe portfolio betas, the risk–return tradeoff, and reconciliation of the two approaches to portfolio management.

Portfolio Theories Under Question

Theories of constructing a portfolio of a large number of diversified securities from a broad cross-section of industries to achieve returns with low risk have come under scrutiny in the wake of the global financial crisis of the 2008–2009 period.

The classical theory, modern portfolio theory (MPT), lost appeal because portfolio constructions using MPT approaches failed when most securities suffered negative returns in this period—they 'imploded in unison'.

Not unexpectedly other theories are now being advanced. One candidate, hybrid portfolio theory, which splits portfolios into two distinct asset groups each offering divergent risk profiles—one ultra-low risk assets (cash, Treasury notes); the other high-risk, high-return assets (shares, hedge funds). To reduce risk and to supply a return the hybrid theorists advocate that the first group comprise 70–90% of the total portfolio.

In this chapter, we continue to explore the tradeoff between risk and return and approaches to asset portfolio management.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Principles of Portfolio Planning

LG1 LG2

Investors benefit from holding portfolios of investments rather than single investment vehicles. Without necessarily sacrificing returns, investors who hold portfolios can reduce risk. Surprisingly, the risk of the portfolio may be less than the risks of the individual assets that make up the portfolio. In other words, when it comes to portfolios and risk, the whole is less than the sum of its parts!

As defined in Chapter 1, a *portfolio* is a collection of investments assembled to meet one or more investment goals. Of course, different investors have different objectives for their portfolios. The primary goal of a **growth-oriented portfolio** is long-term price appreciation. An **income-oriented portfolio** is designed to produce regular dividends and interest payments.

growth-oriented portfolio
a portfolio that aims to achieve long-term price appreciation.

income-oriented portfolio
a portfolio that is designed to produce regular dividends and interest payments.

Portfolio Objectives

Setting portfolio objectives involves definite tradeoffs, such as the tradeoff between risk and return or between potential price appreciation and income. How you evaluate these tradeoffs will depend on your tax bracket, current income needs and ability to bear risk. The key point is that your portfolio objectives must be established *before* you begin to invest.

The ultimate goal of an investor is an **efficient portfolio**, one that provides the highest return for a given level of risk. Efficient portfolios aren't necessarily easy to identify. You usually must search out investment alternatives to get the best combinations of risk and return.

efficient portfolio
a portfolio that provides the highest return for a given level of risk.

Portfolio Return and Standard Deviation

The first step in forming a portfolio is to analyse the characteristics of the securities that an investor might include in the portfolio. Two of the most important characteristics to examine are the returns that each asset might be expected to earn and the uncertainty surrounding that expected return. As a starting point, we will examine historical data to see what returns shares have earned in the past, and how much those returns have fluctuated, to get a feel for what the future might hold.

The return on a portfolio is calculated as a weighted average of returns on the assets (i.e. the investments) that make up the portfolio. You can calculate the portfolio return, r_p, by using Equation 5.1. The portfolio return depends on the returns of each asset in the portfolio and on the fraction invested in each asset, w_j.

Equation 5.1

$$\text{Return on portfolio} = \left(\begin{array}{c}\text{Proportion of portfolio's total dollar value invested in asset 1}\end{array} \times \begin{array}{c}\text{Return on asset 1}\end{array}\right) + \left(\begin{array}{c}\text{Proportion of portfolio's total dollar value invested in asset 2}\end{array} \times \begin{array}{c}\text{Return on asset 2}\end{array}\right) + \cdots + \left(\begin{array}{c}\text{Proportion of portfolio's total dollar value invested in asset } n\end{array} \times \begin{array}{c}\text{Return on asset } n\end{array}\right) = \sum_{j=1}^{n} \left(\begin{array}{c}\text{Proportion of portfolio's total dollar value invested in asset } j\end{array} \times \begin{array}{c}\text{Return on asset } j\end{array}\right)$$

Equation 5.1a

$$r_p = (w_1 \times r_1) + (w_2 \times r_2) + \cdots + (w_n \times r_n) = \sum_{j=1}^{n} (w_j \times r_j)$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Of course, $\sum_{j=1}^{n} w_j = 1$, which means that 100% of the portfolio's assets must be included in this computation.

Panel A of Table 5.1 shows the historical annual returns on two shares, On Mobile (OM) and Paner (PN), from 2001 to 2010. Over that period, OM earned an average annual return of 11.7%. PN earned a spectacular 44.4% annual return.

Now suppose we want to calculate the return on a portfolio containing investments in both OM and PN. The first step in that calculation is to determine how much OM and how much PN to hold; that is, what weight each share should receive in the portfolio. Let's assume that we want to invest 86% of our money in OM and 14% in PN. What kind of return would such a portfolio earn?

We know that over this period, PN earned much higher returns than OM, so intuitively we might expect that a portfolio containing both shares would earn a return higher than OM's but lower than PN's. Also, because most (86%) of the portfolio is

TABLE 5.1 Individual and Portfolio Returns and Standard Deviation of Returns for OM and PN

EXCEL WITH SPREADSHEETS

A. Individual and Portfolio Returns

	(1) Historical Returns*	(2)	(3) Portfolio Weights		(4) Portfolio Return
Year (t)	r_{OM}%	r_{PN}%	$W_{OM} = 0.86$	$W_{PN} = 0.14$	r_p%
2001	12.6	14.8	(0.86 × 12.6) + (0.14 × 14.8) =		12.9
2002	10.2	193.8	(0.86 × 10.2) + (0.14 × 193.8) =		35.9
2003	–7.6	128.2	(0.86 × –7.6) + (0.14 × 128.2) =		11.4
2004	–8.9	33.8	(0.86 × –8.9) + (0.14 × 33.8) =		–2.9
2005	20.6	13.5	(0.86 × 20.6) + (0.14 × 13.5) =		19.6
2006	28.1	2.0	(0.86 × 28.1) + (0.14 × 2.0) =		24.4
2007	11.8	62.9	(0.86 × 11.8) + (0.14 × 62.9) =		18.9
2008	39.1	–14.9	(0.86 × 39.1) + (0.14 × –14.9) =		31.5
2009	24.3	–35.9	(0.86 × 24.3) + (0.14 × –35.9) =		15.9
2010	–13.1	45.8	(0.86 × –13.1) + (0.14 × 45.8) =		–4.9
Average return	11.7	44.4			16.3

B. Individual and Portfolio Standard Deviations

Standard Deviation Calculation for OM:

$$S_{OM} = \sqrt{\frac{\sum_{t=2001}^{2010} (r_{OM,t} - \bar{r})^2}{n-1}} = \sqrt{\frac{(12.6 - 11.7)^2 + \ldots + (-13.1 - 11.7)^2}{10-1}} = \sqrt{\frac{2669.6}{10-1}} = 17.2\%$$

Standard Deviation Calculation for PN:

$$S_{PN} = \sqrt{\frac{\sum_{t=2001}^{2010} (r_{PN,t} - \bar{r})^2}{n-1}} = \sqrt{\frac{(14.8 - 44.4)^2 + \ldots + (45.8 - 44.4)^2}{10-1}} = \sqrt{\frac{43\,403.8}{10-1}} = 69.5\%$$

Standard Deviation Calculation for Portfolio:

$$S_p = \sqrt{\frac{\sum_{t=2001}^{2010} (r_{Port,t} - \bar{r})^2}{n-1}} = \sqrt{\frac{(12.9 - 16.3)^2 + \ldots + (-4.9 - 16.3)^2}{10-1}} = \sqrt{\frac{1553.2}{10-1}} = 13.1\%$$

*Historical return is calculated based on end-of-year prices.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

invested in OM, you might guess that the portfolio's return would be closer to OM's than to PN's.

Columns 3 and 4 in panel A show the portfolio's return each year. The average annual return on this portfolio was 16.3%. As expected, that return is a little higher than the return on OM shares. By investing a little in PN, an investor could earn a higher return than he or she would achieve by holding OM shares in isolation.

What about the portfolio's risk? One measure of a portfolio's risk is its standard deviation. The *standard deviation of a portfolio's returns* is found by applying Equation 4.6, the formula we used to find the standard deviation of a single asset. Panel B of Table 5.1 applies this formula to calculate the standard deviation of returns on OM and PN shares. The standard deviation of OM's returns is 17.2%, and for PN's shares returns the standard deviation is 69.45%. Here again we see evidence of the tradeoff between risk and return. PN's shares earned much higher returns than OM's shares, but PN returns fluctuate a great deal more as well.

The final calculation in panel B inserts the portfolio return data from column 4 in panel A into Equation 4.6 to calculate the portfolio standard deviation. Intuitively, because the portfolio contains a lot of OM shares and a little of PN, you might expect the portfolio standard deviation to be slightly higher than the standard deviation of OM's returns. In fact, panel B shows the surprising result that *the portfolio returns are less volatile than are the returns of either share in the portfolio! The portfolio consisting of 86% OM and 14% PN displays a standard deviation of 13.1%, well below OM's standard deviation*.

An investor who held only OM shares would have earned an average return of 11.7%, but to achieve that return the investors would have had to endure OM's 17.2% standard deviation. By selling a few OM shares and using the proceeds to buy a few PN shares (resulting in the 86% and 14% portfolio weights shown in Table 5.1), an investor could have *simultaneously increased his or her return to 16.3% and reduced the standard deviation to 13.1%*. In other words, the investor could have had more return and less risk at the same time. This means that an investor who owns nothing but OM shares holds an inefficient portfolio—an alternative portfolio exists that has more return and less risk. That's the power of diversification. Next, we will see that the key factor in making this possible is a low correlation between OM and PN returns.

Correlation and Diversification

As noted in Chapter 2, *diversification* involves the inclusion of a number of different investment vehicles in a portfolio. It is an important aspect of creating an efficient portfolio. Underlying the intuitive appeal of diversification is the statistical concept of *correlation*. For effective portfolio planning, you need to understand the concepts of correlation and diversification and their relationship to a portfolio's total risk and return.

correlation
a statistical measure of the relationship, if any, between two series of numbers.

positively correlated
describes two series that move in the same direction.

negatively correlated
describes two series that move in opposite directions.

Correlation **Correlation** is a statistical measure of the relationship, if any, between two series of numbers. If two series move in the same direction, they are **positively correlated**. For instance, if each day we record the number of hours of sunshine and the average daily temperature, we would expect those two series to display positive correlation. Days with more sunshine tend to be days with higher temperatures. If the series move in opposite directions, they are **negatively correlated.** For example, if each day we record the number of hours of sunshine and the amount of rainfall, we would expect those two series to display negative correlation because, on average, rainfall is lower on days with a lot of sunshine. Finally, if two series bear no relationship at all to

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

uncorrelated
describes two series that have no relationship at all to each other.

each other, then they are **uncorrelated.** For example, we would probably expect no correlation between the number of hours of sunshine on a particular day and the change in the value of the dollar against other world currencies on the same day. There is no obvious connection between weather and world currency markets.

correlation coefficient
a measure of the degree of correlation between two series.

The degree of correlation—whether positive or negative—is measured by the **correlation coefficient.** It's easy to use Excel to calculate the correlation coefficient between OM and PN returns. First, enter the returns for OM in a spreadsheet in column A, rows 1–10. Next, enter the returns for PN in the first 10 rows of column B.

Finally, in any empty cell, type the formula:

$$= \text{correl(A1:A10,B1:B10)}$$

Excel will quickly tell you that the correlation coefficient between OM and PN during the 2001–2010 period was −0.49. This means that during a year in which OM shares earned below-average returns, the odds were high that PN shares were enjoying above-average returns, and vice versa. A negative correlation between two shares is somewhat unusual because most shares are affected in the same way by large, macroeconomic forces. In other words, most shares tend to move in the same direction as the overall economy, which means that most shares will display at least some positive correlation with each other.

perfectly positively correlated
describes two positively correlated series that have a correlation coefficient of +1.

perfectly negatively correlated
describes two negatively correlated series that have a correlation coefficient of –1.

The correlation coefficient ranges from +1 for **perfectly positively correlated** series to −1 for **perfectly negatively correlated** series. These two extremes are depicted in Figure 5.1 for series M, N and P. The perfectly positively correlated series (M and P) move exactly together. The perfectly negatively correlated series (M and N) move in exactly opposite directions. While these two extreme cases can be illustrative, *the correlations between most asset returns exhibit some degree (ranging from high to low) of positive correlation.* Negative correlation is the exception.

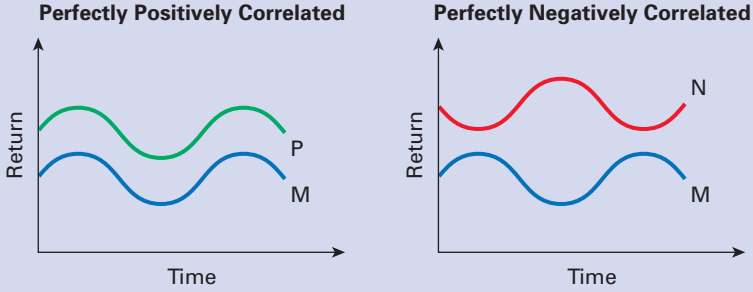
Diversification As a general rule, the lower the correlation between any two assets, the greater the risk reduction that can be achieved by combining those assets in a portfolio. Figure 5.2 shows negatively correlated assets F and G, both having the same average return, $\bar{r}$. The portfolio that contains both F and G has the same return, $\bar{r}$, but has less risk (variability) than either of the individual assets because some of the fluctuations in asset F cancel out fluctuations in G. As a result, the combination of F and G is less volatile than either F or G alone. Even if assets are not negatively correlated, the lower the positive correlation between them, the lower the resulting risk.

Table 5.2 (on page 138) shows the average return and the standard deviation of returns for many different combinations of OM and PN shares. Columns 1 and 2 show

FIGURE 5.1

The Correlation Between Series M, N and P

The perfectly positively correlated series M and P in the graph on the left move exactly together. The perfectly negatively correlated series M and N in the graph on the right move in exactly opposite directions.

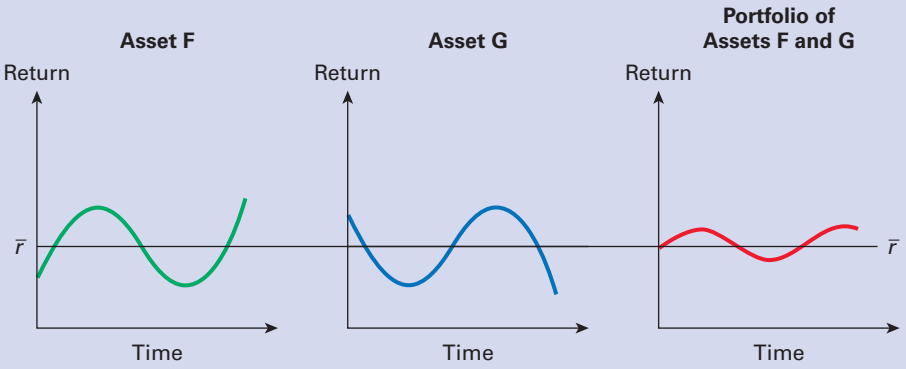


Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 5.2

Combining Negatively Correlated Assets to Diversify Risk

The risk or variability of returns, resulting from combining negatively correlated assets F and G, both having the same average return, $\bar{r}$, results in a portfolio (shown in the right-most graph) with the same level of average return but less risk.



the percentage of the portfolio invested in OM and PN, respectively, and columns 3 and 4 show the portfolio average return and standard deviation. Notice that as you move from the top of the table to the bottom (i.e. from investing all of the portfolio in OM to investing all of it in PN), the portfolio return goes up. That makes sense because as you move from top to bottom, the percentage invested in PN increases, and PN's average return is higher than OM's. The general conclusion from column 3 is that *when a portfolio contains two shares, with one having a higher average return than the other, the portfolio's return rises the more you invest in the shares with the higher return.*

TABLE 5.2 Portfolio Returns and Standard Deviations EXCEL WITH SPREADSHEETS

(1) Portfolio Weights		(3) Portfolio Average Return %	(4) Portfolio Standard Deviations%
W_{OM}	W_{PN}	$\bar{r}_{OM} = 11.7\%$ $\bar{r}_{PN} = 44.4\%$	
1.0	0.0	$(1.0 \times 11.7) + (0.0 \times 44.4) = 11.7$	17.2
0.9	0.1	$(0.9 \times 11.7) + (0.1 \times 44.4) = 15.0$	13.5
0.8	0.2	$(0.8 \times 11.7) + (0.2 \times 44.4) = 18.2$	14.0
0.7	0.3	$(0.7 \times 11.7) + (0.3 \times 44.4) = 21.5$	18.3
0.6	0.4	$(0.6 \times 11.7) + (0.4 \times 44.4) = 24.8$	24.4
0.5	0.5	$(0.5 \times 11.7) + (0.5 \times 44.4) = 28.1$	31.4
0.4	0.6	$(0.4 \times 11.7) + (0.6 \times 44.4) = 31.3$	38.8
0.3	0.7	$(0.3 \times 11.7) + (0.7 \times 44.4) = 34.6$	46.3
0.2	0.8	$(0.2 \times 11.7) + (0.8 \times 44.4) = 37.9$	54.0
0.1	0.9	$(0.1 \times 11.7) + (0.9 \times 44.4) = 41.1$	61.7
0.0	1.0	$(0.0 \times 11.7) + (1.0 \times 44.4) = 44.4$	69.5

Example: Calculation of the Standard Deviation for the Equally Weighted Portfolio

$S_{OM} = 17.2\%$
$S_{PN} = 69.5\%$
$\rho_{OM,PN} = -0.49$

$$S_p = \sqrt{w_i^2 s_i^2 + w_j^2 s_j^2 + 2 w_i w_j \rho_{i,j} s_i s_j}$$

$$S_p = \sqrt{(0.5^2 \times 17.2^2) + (0.5^2 \times 69.5^2) + (2 \times 0.5 \times 0.5 \times -0.49 \times 17.2 \times 69.5)} = 31.4$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Column 4 shows the standard deviation of returns for different portfolios of OM and PN. Here again we see a surprising result. A portfolio invested entirely in OM has a standard deviation of 17.2%. Intuitively, it might seem that reducing the investment in OM slightly and increasing investment in PN would increase the portfolio's standard deviation because PN shares are so much more volatile than OM shares. However, the opposite is true, at least up to a point. The portfolio standard deviation initially falls as the percentage invested in PN rises. Eventually, however, increasing the amount invested in PN does increase the portfolio's standard deviation. So the general conclusion from column 4 is that *when a portfolio contains two shares, with one having a higher standard deviation than the other, the portfolio's standard deviation may rise or fall the more you invest in the shares with the higher standard deviation.*

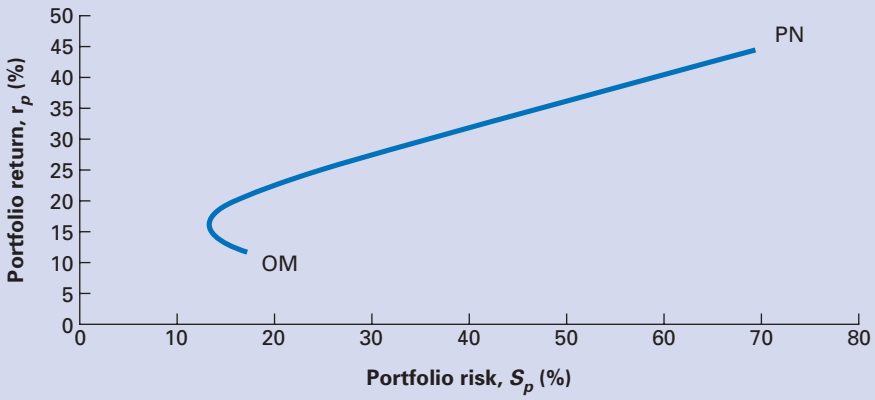
Figure 5.3 illustrates the two lessons emerging from Table 5.2. The curve plots the average return (*y*-axis) and standard deviation (*x*-axis) for each of the portfolios listed in Table 5.2. As the portfolio composition moves from 100% OM to a mix of OM and PN, the average return rises, but the standard deviation initially falls. Therefore, portfolios of OM and PN trace out a backward-bending arc. Clearly no investor should place all of his or her money in OM because a higher return and lower standard deviation can be achieved by holding at least some shares in PN. However, investors who want to earn the highest possible returns, and who therefore will invest heavily in PN, have to accept a higher standard deviation.

The relationship between OM and PN is obviously a special case, so let's look at the more general patterns that investors encounter in the markets. In addition, let's shift our focus from historical to expected returns. Table 5.3 presents the expected returns from three different assets—X, Y and Z—over the next five years (2012–2016), along with their average expected returns and standard deviations. Asset X has an average expected return of 12% and a standard deviation of 3.16%. Assets Y and Z each have an average expected return of 16% and a standard deviation of 6.32%. Thus, we can view asset X as having a low-return, low-risk profile while assets Y and Z are high-return, high-risk shares. The returns of assets X and Y are perfectly negatively correlated—they move in

FIGURE 5.3

Portfolios of On Mobile (OM) and Paner (PN)

Because the returns of OM and PN are not highly correlated, investors who hold only OM shares can simultaneously increase their portfolio return and reduce its standard deviation by holding at least some PN shares. At some point, however, investing more in PN does increase the portfolio volatility while also increasing its expected return.



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 5.3 Expected Returns, Average Returns, and Standard Deviations for Assets X, Y, and Z and Portfolios XY and XZ

EXCEL WITH SPREADSHEETS

	Assets' Expected Returns			Portfolios' Expected Returns	
				$E(r_{XY})$%	$E(r_{XZ})$%
Year (t)	$E(r_X)$%	$E(r_Y)$%	$E(r_Z)$%	[⅔ × $E(r_X)$% + ⅓ × $E(r_Y)$%]	[⅔ × $E(r_X)$% + ⅓ × $E(r_Z)$%]
2012	8.0	24.0	8.0	13.3	8.0
2013	10.0	20.0	12.0	13.3	10.7
2014	12.0	16.0	16.0	13.3	13.3
2015	14.0	12.0	20.0	13.3	16.0
2016	16.0	8.0	24.0	13.3	18.7
Average expected return	12.0	16.0	16.0	13.3	13.3
Standard deviation	3.16	6.32	6.32	0.00	4.74

INVESTOR FACTS

ONE OF THE BASIC RULES OF investment is that past performance, on its own, should never be accepted as an indicator of future performance. The rule has been set in bold type in almost every investor guide and textbook. But in the heat of a boom market, even those who should know better forget the basics, and end up paying a big price for their rashness. An unhappy example is the recent losses incurred by investors in real estate investment trusts (REITs).

Over the 2008–2009 period this sector in Australia had an overall fall in value from A$110 billion to $A66 billion and REIT investors suffered epic losses. They faced large property devaluations and huge distribution cuts. And in 2010 the sector was struggling to return to 2007 prices.

If nothing else, investors in these funds can gain two lessons from their experiences. The basic rules of investment do not change, whether the background is a roaring bull market or today's risk-averse market.

First, do not base investment decisions on past performances. Neither the past performance of a particular sector nor the past performance of a manager is a reliable indicator of future results.

Second, investors need to diversify. Most people do not have unique insights into a sector, so what one person knows is quite likely known by others, and those expectations will have already been incorporated into security prices. The only reliable way to gain exposure to high-growth areas is diversification.

exactly opposite directions over time. The returns of assets X and Z are perfectly positively correlated—they move in precisely the same direction.

Portfolio XY (shown in Table 5.3) is constructed by investing ⅔ in asset X and ⅓ in asset Y. The expected return on this portfolio, 13.3%, is a weighted average of the expected returns of assets X and Y (⅔ × 12% + ⅓ × 16%). To calculate the portfolio's standard deviation, use the equation shown in Table 5.2 (on page 138) with a value of −1.0 for the correlation between X and Y. Notice that portfolio XY generates a predictable 13.3% return every year. In other words, the portfolio is risk-free and has a standard deviation of zero.

Portfolio XZ uses the same proportions: ⅔ invested in X and ⅓ invested in Z. Like portfolio XY, portfolio XZ has an expected return of 13.3%. But unlike portfolio XY, portfolio XZ is risky. Its returns fluctuate between 8% and 18.7%.

To summarise, the two portfolios, XY and XZ, have identical expected returns, but they differ in terms of risk. The reason for that difference is correlation. Movements in X are offset by movements in Y, so by combining the two assets in a portfolio, the investor can reduce or eliminate risk. Assets X and Z move together, so movements in one cannot offset movements in the other, and the standard deviation of portfolio XZ cannot be reduced below the standard deviation of asset X.

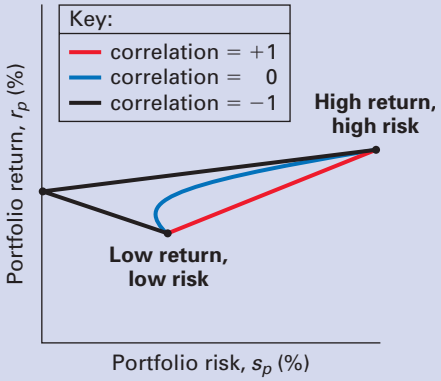
Figure 5.4 illustrates the relation between a portfolio's expected return and standard deviation and the correlation between the assets in the portfolio. The black line illustrates a case like portfolio XY where the correlation coefficient is −1.0. In that case, it is possible to combine two risky assets in just the right proportions so that the portfolio return is completely predictable (i.e. has no risk). Notice that in this situation, it would be very unwise for an investor to hold an undiversified position in the least risky asset. By holding a portfolio of assets rather than just one, the investor moves up and to the left along the black line to earn a higher return while taking less risk. Beyond some point, however, increasing the investment in the more risky asset pushes both the portfolio return and risk higher, so the investor's portfolio moves up and to the right along the second segment of the black line.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 5.4

Risk and Return for Combinations of Two Assets with Various Correlation Coefficients

This graph illustrates how a low-return, low-risk asset can be combined with a high-return, high-risk asset in a portfolio, and how the performance of that portfolio depends on the correlation between the two assets. In general, as an investor shifts the portfolio weight from the low-return to the high-return investment, the portfolio return will rise. But the portfolio's standard deviation may rise or fall depending on the correlation. In general, the lower the correlation, the greater the risk reduction that can be achieved through diversification.



The red line in Figure 5.4 illustrates a situation like portfolio XZ in which the correlation coefficient is +1.0. In that instance, when an investor decreases their investment in the low-risk asset to hold more of the high-risk asset, the portfolio's expected return rises, but so does its standard deviation. The investor moves up and to the right along the red line. An investor might choose to invest in both assets, but making that decision is a matter of one's risk tolerance, and not all investors will make that choice. In other words, when the correlation between two assets is −1.0, diversifying is definitely the right move, but when the correlation is +1.0, whether to diversify or not is less obvious.

The blue line in Figure 5.4 illustrates an intermediate case in which the correlation coefficient is between −1.0 and +1.0. This is what investors encounter in real markets most of the time—assets are neither perfectly negatively correlated, nor are they perfectly positively correlated. When the correlation coefficient is between the extremes, portfolios of two assets lie along an arc (i.e. the blue line). When two assets have very low correlation, that arc may bend back upon itself, as was the case with OM and PN. When the correlation is higher, but still below 1.0, the arc merely curves up and to the right. Even then, the benefits of diversification are better than when the correlation is 1.0, meaning that portfolios along the blue arc earn higher returns for the same risk compared to portfolios along the red line.

International Diversification

Diversification is clearly a primary consideration when constructing an investment portfolio. As noted earlier, many opportunities for international diversification are now available. Here we consider three aspects of international diversification: effectiveness, methods and benefits.

Effectiveness of International Diversification Investing internationally offers greater diversification than investing only domestically. That is true for Australian investors. It is even truer for investors from countries with capital markets that offer much more limited diversification opportunities than are available in Australia, Europe and the United States.

However, does international diversification actually reduce risk, particularly the variability of rates of return? Two classic studies overwhelmingly support the argument that well-structured international diversification does indeed reduce the risk of a portfolio and increase the return on portfolios of comparable risk. One study looked at

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

Australian investors can invest in international managed funds like TAAM New Asia Fund, which is focused on Asian growth areas.

This fund maintains a portfolio of shares in companies in Asia, excluding Japan. Its team of bottom-up analysts travels the region to find businesses with sustainable earnings, sound financials and good management. China, South Korea and Taiwan attract the largest overweight positions against the MSCI All Country Asia Ex-Japan Index, on 29%, 21% and 20%, respectively. The fund has struggled against its benchmark since inception in November 2005.

Performance	1 YR %	3 YR %PA	5 YR %PA
TAAM New Asia	24.58	0.13	N/A
MSCI AC Asia Ex-Japan NR AUD	21.22	1.00	10.31

Top 10 Stocks	%
Bank of China (Hong Kong) Holdings	4.2
Industrial and Commercial Bank of China	4.2
Samsung Electronics	3.8
Chunghwa Telecom	3.4
Lenovo Group	2.9
China Life Insurance Company	2.8
Bank of China	2.7
Singapore Airport Terminal Services	2.7
Sinofert Holdings	2.7
HDFC Bank	2.7

(*Source: Smart Investor*, December 2009, p. 14. Courtesy of the *Australian Financial Review*.)

diversification across 12 European countries in seven different industries between 1978 and 1992. It found that an investor could actually reduce the risk of a portfolio much more by diversifying internationally *in the same industry* than by diversifying across industries within one country. If the investor diversified across both countries and industries, the opportunities for risk reduction were even greater.

Another study examined the risk–return performance between January 1984 and November 1994 of diversified shares portfolios: the S&P 500 in the United States and Morgan Stanley's Europe/Australia/Far East (EAFE) Index. It found that a 100% EAFE portfolio offered a much greater return than a 100% S&P 500 portfolio did—but at much greater risk. However, a portfolio composed of various combinations of the two indices would have been better. It would have realised both lower risk and a higher return than did the 100% S&P 500 portfolio and less risk and a moderately lower return than did the 100% EAFE portfolio. For the investor, a portfolio consisting of 70% S&P 500 coupled with 30% EAFE would have reduced risk by about 5% and increased return by about 7% (from around 14% to more than 15%). Or, for the same degree of risk, an investor could have increased return by about 18% (from around 14% to more than 16.5%).

Methods of International Diversification In later chapters we will examine a wide range of alternatives for international portfolio diversification. We will see that investors can make investments in bonds and other debt instruments in Australian dollars or in foreign currencies—either directly or via foreign managed funds. Foreign currency investment, however, brings currency exchange risk. This risk can be hedged with contracts such as currency forwards, futures and options. Even if there is little or no currency exchange risk, investing abroad is generally less convenient, more expensive and riskier than investing domestically. When making direct investments abroad, you must know what you're doing. You should have a clear idea of the benefits being sought and enough time to monitor foreign markets.

International diversification can also be achieved by Australian domestic investments. Investors can buy shares of foreign companies listed on the ASX. For example a number of UK- and NZ-based companies list on the ASX. Finally, international managed funds (such as Treasury Asia Asset New Asia Fund (TAAM)) provide foreign investment opportunities.

You might wonder whether it is possible to achieve the benefits of international diversification by investing in a portfolio of Australian-based multinational corporations. The answer is yes and no. Yes, a portfolio of Australian multinationals is more diversified than a portfolio of wholly domestic firms. Multinationals generate revenues, costs and profits in many different markets and currencies, so when one part of the world is doing poorly, another part may be doing well.

Investors who invest only in Australian-based multinationals will still not enjoy the full benefits of international diversification. That's because a disproportionate share of the revenues and costs generated by these companies are still in Australia. Thus, to fully realise

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

the benefits of international diversification, it is necessary to invest in companies located outside Australia.

Benefits of International Diversification Can you find greater returns overseas than in Australia? Yes! Can you reduce a portfolio's risk by including foreign investments? Yes! Is international diversification desirable for you? Maybe a successful global investment strategy depends on many things, just as a purely domestic strategy does. Included are factors such as your resources, goals and risk tolerance. What percentage of your portfolio you allocate to foreign investments depends on your overall investment goals and risk preferences. Commonly cited allocations to foreign investments are about 20–30%, with two-thirds of this allocation in established foreign markets and the other one-third in emerging markets.

In general, you should avoid investing directly in foreign-currency-denominated instruments. Unless the magnitude of each foreign investment is in hundreds of thousands of dollars, the transactions costs will tend to be high. A safer choice for international diversification would be international managed funds, which offer diversified foreign investments and the professional expertise of fund managers. With managed funds you can obtain international diversification along with low cost, convenience, transactions in dollars, protection under Australian security laws and (usually) attractive markets.

We should not leave this topic without saying that some of the benefits of international diversification are diminishing over time. Technological advances in communications have greatly improved the quality of information on foreign companies. Participation by a growing number of better-informed investors in the foreign markets continues to reduce the opportunities to earn 'excess' returns on the additional risk embodied in foreign investments, thereby levelling the playing field. However, the relatively low correlation of returns in Asian and emerging markets with Australian returns continues to make international investments appealing as a way to diversify your portfolio. *Today, an important motive for international investment is portfolio diversification rather than realising sizeable excess returns.*

CONCEPTS IN REVIEW

Answers available at **www.pearson.com.au/myfinancelab** or **www.pearson.com.au/9781442532885**

5.1 What is an *efficient portfolio*, and what role should such a portfolio play in investing?

5.2 How can the return and standard deviation of a portfolio be determined? Compare the portfolio standard deviation calculation to that for a single asset.

5.3 What is *correlation*, and why is it important with respect to asset returns? Describe the characteristics of returns that are (a) positively correlated, (b) negatively correlated, and (c) uncorrelated. Differentiate between *perfect positive correlation* and *perfect negative correlation*.

5.4 What is *diversification*? How does the diversification of risk affect the risk of the portfolio compared to the risk of the individual assets it contains?

5.5 Discuss how the correlation between asset returns affects the risk and return behaviour of the resulting portfolio. Describe the potential range of risk and return when the correlation between two assets is (a) perfectly positive, (b) uncorrelated, and (c) perfectly negative.

5.6 What benefit, if any, does international diversification offer the individual investor? Compare and contrast the methods of achieving international diversification by investing abroad versus investing domestically.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Capital Asset Pricing Model (CAPM)

LG3 LG4

From an investor's perspective, the relevant risk is the *inescapable risk* of the company. This risk significantly affects the returns earned and the value of the company in the financial marketplace. As you'll learn in Chapter 8, the company's value is directly determined by its risk and the associated return. The basic theory that links return and the relevant risk for all assets is the *capital asset pricing model (CAPM)*.

Components of Risk

diversifiable (unsystematic) risk
the portion of an investment's risk that results from uncontrollable or random events that are company-specific; can be eliminated through diversification.

The risk of an investment consists of two components: diversifiable and non-diversifiable risk. **Diversifiable risk**, sometimes called **unsystematic risk**, results from uncontrollable or random events that are company-specific, such as labour strikes, lawsuits and regulatory actions. It is the portion of an investment's risk that can be eliminated through diversification**. Non-diversifiable risk**, also called **systematic risk**, is the inescapable portion of an investment's risk. It is attributed to more general forces such as war, inflation and political events that affect all investments and therefore are not unique to a given vehicle. The sum of non-diversifiable risk and diversifiable risk is called **total risk**.

Equation 5.2

Total risk = Non-diversifiable risk + Diversifiable risk

non-diversifiable (systematic) risk
the inescapable portion of an investment's risk attributable to forces that affect all investments and therefore are not unique to a given vehicle.

total risk
the sum of an investment's non-diversifiable risk and diversifiable risk.

Any careful investor can reduce or virtually eliminate diversifiable risk by holding a diversified portfolio of securities. Studies have shown that investors can eliminate most diversifiable risk by carefully selecting a portfolio of eight to 15 securities. Therefore, *the only relevant risk is non-diversifiable risk,* which is inescapable. Each security has its own unique level of non-diversifiable risk, which we can measure, as we'll show in the following section.

Beta: A Popular Measure of Risk

During the past 40 years, the finance discipline has developed much theory on the measurement of risk and its use in assessing returns. The two key components of this theory are *beta,* which is a measure of risk, and the *capital asset pricing model (CAPM),* which uses beta to estimate return.

beta
a measure of *non-diversifiable*, or *market, risk* that indicates how the price of a security responds to market forces.

market return
the average return for all (or a large sample of) shares (e.g. S&P/ASX 200 Index).

First we will look at **beta** (β), a number that measures *non-diversifiable,* or *market, risk*. Beta indicates how the price of a security responds to market forces. The more responsive the price of a security is to changes in the market, the higher that security's beta. Beta is found by relating the historical returns for a security to the market return. **Market return** is the average return for all (or a large sample of) shares. Analysts commonly use the average return on all shares in the S&P/ASX 200 Index or some other broad share index to measure market return. You don't have to calculate betas yourself; you can easily obtain them for actively traded securities from a variety of published and online sources. But you should understand how betas are derived, how to interpret them and how to apply them to portfolios.

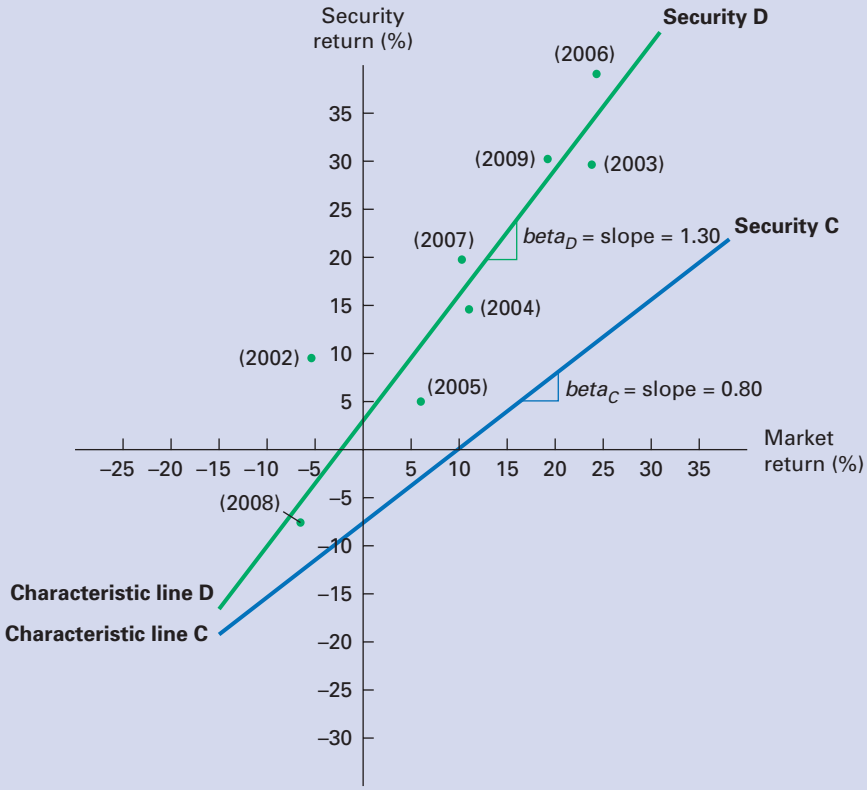
Deriving Beta We can demonstrate graphically the relationship between a security's return and the market return, and its use in deriving beta. Figure 5.5 plots the relationship between the returns of two securities, C and D, and the market return. Note that the horizontal (x) axis measures the historical market returns, and the vertical (y) axis measures the individual security's historical returns.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 5.5

Graphical Derivation of Beta for Securities C and D*

Betas can be derived graphically by plotting the coordinates for the market return and security return at various points in time and using statistical techniques to fit the 'characteristic line' to the data points. The slope of the characteristic line is beta. For securities C and D, the betas are 0.80 and 1.30, respectively.



*All data points shown are associated with security D. No data points are shown for security C.

The first step in deriving beta is plotting the coordinates for the market return and the security return at various points in time. Figure 5.5 shows such annual market-return and security-return coordinates *for security D* for the years 2002 to 2009 (the years are noted in parentheses). For example, in 2007, security D's return was 20% when the market return was 10%.

By use of statistical techniques, the 'characteristic line' that best explains the relationship between security-return and market-return coordinates is fit to the data points. *The slope of this line is beta.* The beta for security D is 1.30. In comparison to a beta of 0.80 for security C (also shown in Figure 5.5), security D's higher beta—steeper characteristic line slope—indicates that its return is more responsive to changing market returns. *Therefore, security D is more risky than security C.*

Interpreting Beta The beta for the overall market is equal to 1.00. That also implies that the beta of the 'average' share is 1.0. All other betas are viewed in relation to this value. Table 5.4 shows some selected beta values and their associated interpretations. As you can see, betas can, in principle, be positive or negative, although *nearly all betas are positive.* The positive or negative sign preceding the beta number merely indicates whether the share's return moves in the *same direction as the general market* (positive beta) or in the *opposite direction* (negative beta).

Most shares have betas that fall between 0.50 and 1.75. The return of a share that is half as responsive as the market ($\beta = 0.05$) is expected to change by ½ of 1% for

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 5.4 Selected Betas and Associated Interpretations

Beta	Comment	Interpretation
2.00	Move in same direction as the market	Twice as responsive as the market
1.00		Same response as the market
0.50		One half as responsive as the market
0		Unaffected by market movement
−0.50	Move in opposite direction as the market	Only half as responsive as the market
−1.00		Same response as the market
−2.00		Twice as responsive as the market

each 1% change in the return of the market portfolio. A share that is twice as responsive as the market ($\beta = 2.0$) is expected to experience a 2% change in its return for each 1% change in the return of the market portfolio. Listed here, for illustration purposes, are the actual betas for some popular shares, as reported on Yahoo!7 Finance on 16 April 2010. The betas are found in key statistics for each company.

Shares	Beta
AMP	1.88
ANZ	0.77
Brambles	1.07
BHP	1.04
CBA	0.68
Flight Centre	0.91
Harvey Norman	1.20
NewsCorp	1.47
Rio Tinto	1.22
Telstra	0.50
Woolworths	0.63

Many large brokerage firms, as well as subscription services, publish betas for a broad range of securities. They also can be obtained online through sites such as Yahoo!7 Finance. The ready availability of security betas has enhanced their use in assessing investment risks. Later in this chapter we discuss the importance of beta in planning and building portfolios of securities.

Applying Beta Individual investors will find beta useful. It can help in assessing market risk and in understanding the impact the market can have on the return expected from a share. In short, beta reveals how a security responds to market forces. For example, if the market is expected to experience a 10% *increase* in its rate of return over the next period, we would expect a share with a beta of 1.50 to experience an *increase* in return of about 15% (1.50 × 10%). Because its beta is greater than 1.00, this share is more volatile than the market as a whole.

For shares with positive betas, increases in market returns result in increases in security returns. Unfortunately, decreases in market returns are translated into decreasing security returns. In the preceding example, if the market is expected to experience a 10% *decrease* in its rate of return, then a share with a beta of 1.50 should experience a 15% *decrease* in its return. Because the share has a beta greater than 1.00, it is more responsive than the market, either up or down.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

WHICH BETA?—Working with betas is not an exact science. A researcher recently found that by browsing through 16 different financial websites, one could find estimates of beta for the same company (Walt Disney) ranging from 0.72 to 1.39. If you try to estimate betas on your own, you will find that your estimates will vary depending on how much historical data you use in your analysis and the frequency with which returns are measured.

(*Source:* Pablo Fernandez (2009, *Betas used by professors: A survey with 2,500 answers,* IESE Business School, May.)

Shares that have betas less than 1.00 are, of course, less responsive to changing returns in the market. They are therefore considered less risky. For example, a share with a beta of 0.50 will increase or decrease its return by about half that of the market as a whole. Thus, if the market return went down by 8%, such a share's return would probably experience only about a 4% (0.50 × 8%) decline.

Here are some important points to remember about beta:

- Beta measures the non-diversifiable (or market) risk of a security.
- The beta for the market is 1.00.
- Shares may have positive or negative betas. Nearly all are positive.
- Shares with betas greater than 1.00 are more responsive to changes in the market return and therefore are more risky than the market. Shares with betas less than 1.00 are less risky than the market.
- Because of its greater risk, the higher a share's beta, the greater its level of expected return.

The CAPM: Using Beta to Estimate Return

capital asset pricing model (CAPM)
a model that formally links the notions of risk and return; it uses beta, the risk-free rate and the market return to help investors define the required return on an investment.

About 40 years ago, finance professors William F. Sharpe and John Lintner developed a model that uses beta to formally link the notions of risk and return. Called the **capital asset pricing model (CAPM)**, it attempts to explain the behaviour of security prices. It also provides a mechanism whereby investors can assess the impact of a proposed security investment on their portfolio's risk and return. The CAPM predicts that a share's expected return depends on three things: the risk-free rate, the expected return on the overall market and the share's beta.

The Equation With beta, β, as the measure of non-diversifiable risk, the capital asset pricing model defines the required return on an investment as follows.

Equation 5.3

$$\text{Required return on investment } j = \text{Risk-free rate} + \left[\text{Beta for investment } j \times \left(\text{Expected market return} - \text{Risk-free rate}\right)\right]$$

Equation 5.3a

$$r_j = R_F + [\beta_j \times (r_m - R_F)]$$

where

r_j = the required return on investment j, given its risk as measured by beta
R_F = the risk-free rate of return; the return that can be earned on a risk-free investment
β_j = beta coefficient or index of non-diversifiable risk for investment j
r_m = the expected market return; the average return on all securities (typically measured by the average return on all securities in the S&P ASX 200 Index or some other broad sharemarket index)

The CAPM can be divided into two parts: (1) the risk-free rate of return, R_F, and (2) the *risk premium*, $\beta_j \times (r_m - R_F)$. The risk premium is the return investors demand beyond the risk-free rate to compensate for the investment's non-diversifiable risk as

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

measured by beta. The equation shows that *as beta increases, the share's risk premium increases, thereby causing the required return to increase.*

We can demonstrate use of the CAPM with the following example. Assume you are considering security Z with a beta (β_Z) of 1.25. The risk-free rate (R_F) is 6% and the market return (r_m) is 10%. Substituting these data into the CAPM equation, Equation 5.3a, we get:

$$r_Z = 6\% + [1.25 \times (10\% - 6\%)] = 6\% + (1.25 \times 4\%)$$
$$= 6\% + 5\% = \underline{\underline{11\%}}$$

You should therefore expect—indeed, require—an 11% return on this investment as compensation for the risk you have to assume, given the security's beta of 1.25.

If the beta were lower, say, 1.00, the required return would be lower. In fact, in this case the required return on the share is the same as the expected (or required) return on the market.

$$r_Z = 6\% + [1.00 \times (10\% - 6\%)] = 6\% + 4\% = \underline{\underline{10\%}}$$

If the beta were higher, say 1.50, the required return would be higher:

$$r_Z = 6\% + [1.50 \times (10\% - 6\%)] = 6\% + 6\% = \underline{\underline{12\%}}$$

Clearly, the CAPM reflects the positive tradeoff between risk and return: the higher the risk (beta), the higher the risk premium, and therefore the higher the required return.

security market line (SML) the graphical depiction of the capital asset pricing model; reflects the investor's required return for each level of non-diversifiable risk, measured by beta.

The Graph: The Security Market Line (SML) When the capital asset pricing model is depicted graphically, it is called the **security market line** (**SML**). Plotting the CAPM, we would find that the SML is, in fact, a straight line. For each level of non-diversifiable risk (beta), the SML reflects the required return the investor should earn in the marketplace.

We can plot the CAPM at a given point in time by simply calculating the required return for a variety of betas. For example, as we saw earlier, using a 6% risk-free rate and a 10% market return, the required return is 11% when the beta is 1.25. Increase the beta to 2.00, and the required return equals 14% (6% + 2.00 × (10% − 6%)). Similarly, we can find the required return for a number of betas and end up with the following combinations of risk (beta) and required return.

Plotting these values on a graph (with beta on the horizontal axis and required returns on the vertical axis) would yield a straight line like the one in Figure 5.6. The shaded area shows the amount by which the required return exceeds the risk-free rate. It represents the risk premiums. It is clear from the SML that as risk (beta) increases, so do the risk premium and required return, and vice versa.

Risk (Beta)	Required Return
0.0	6%
0.5	8
1.0	10
1.5	12
2.0	14
2.5	16

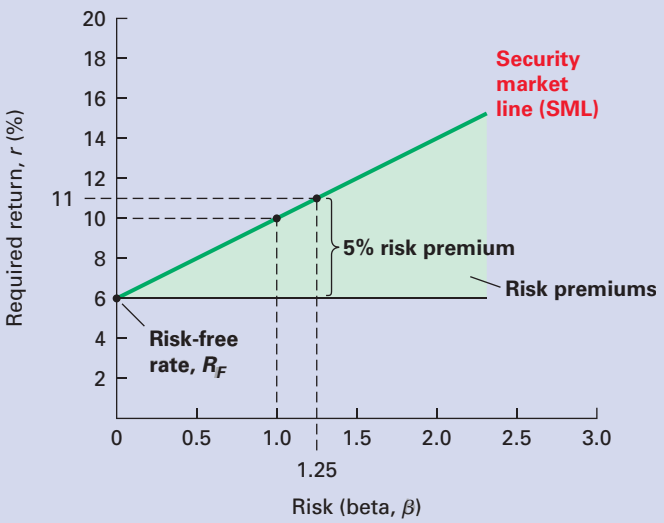
Some Closing Comments The capital asset pricing model generally relies on historical data. The betas may or may not actually reflect the *future* variability of returns. Therefore, the required returns specified by the model can be viewed only as rough approximations. Analysts who use betas commonly make subjective adjustments to the historically determined betas to reflect their expectations of the future.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 5.6

The Security Market Line (SML)

The security market line clearly depicts the tradeoff between risk and return. At a beta of 0, the required return is the risk-free rate of 6%. At a beta of 1.0, the required return is the market return of 10%. Given these data, the required return on an investment with a beta of 1.25 is 11% and its risk premium is 5% (11% – 6%).



Despite its limitations, the CAPM provides a useful conceptual framework for evaluating and linking risk and return. Its simplicity and practical appeal cause beta and CAPM to remain important tools for investors who seek to measure risk and link it to required returns in security markets. The CAPM also sees widespread use in corporate finance, because before they spend large sums of money on big investment projects, companies need to know what returns their shareholders require. Many surveys show that the primary method that companies use to determine the required rate of return on their shares is the CAPM.

For a useful summary on the empirical testing of the CAPM and alternatives to the CAPM (e.g. arbitrage pricing theory), as well as the state of asset pricing theory, see Chapter 6 of *Corporate Finance* by Megginson, Smart and Gitman (South-Western, 2007). The alternatives to the CAPM have not supplanted the CAPM in the corporate finance world where the CAPM has widespread use.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

5.7 Briefly define and give examples of each of the following components of total risk. Which is the relevant risk, and why?

a. *Diversifiable risk*
b. *Non-diversifiable risk*

5.8 Explain what is meant by *beta*. What is the relevant risk measured by beta? What is the *market return*? How is the interpretation of beta related to the market return?

5.9 What range of values does beta typically exhibit? Are positive or negative betas more common? Explain.

5.10 What is the *capital asset pricing model (CAPM)*? What role does beta play in it? What is the *risk premium*? How is the *security market line (SML)* related to the CAPM?

5.11 Is the CAPM a predictive model? Why do beta and the CAPM remain important to investors?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Traditional Versus Modern Portfolio Management

LG5 LG6

Individual and institutional investors currently use two approaches to plan and construct their portfolios. The *traditional approach* refers to the less-quantitative methods that investors have been using since the evolution of the public securities markets. *Modern portfolio theory (MPT)* is a more recent, more mathematical development that relies on quantitative analysis to guide investment decisions.

The Traditional Approach

traditional portfolio management
an approach to portfolio management that emphasises 'balancing' the portfolio by assembling a wide variety of shares and/or bonds of companies from a broad range of industries.

Traditional portfolio management emphasises 'balancing' the portfolio by assembling a wide variety of shares and/or bonds. The typical emphasis is *inter-industry diversification*. This produces a portfolio with securities of companies from a broad range of industries. Traditional portfolios are constructed using the security analysis techniques discussed in Chapters 7 and 8.

Table 5.5 presents the industry groupings and the percentages invested in them by a typical managed fund that is managed by professionals using the conventional approach. This fund, Australian Share Portfolio (ASP), is hypothetical but typifies funds holding Australian shares.

Analysing the share position of TASP, we observe the traditional approach to portfolio management at work. This fund holds numerous shares from a broad cross-section of the total universe of available shares. The shares are a mix of large and medium companies. By far the largest industry group is financial services (banks), followed by industry materials and media.

Those who manage traditional portfolios want to invest in well-known companies for three reasons. First, because these are known as successful enterprises, investing in them is perceived as less risky than investing in lesser known companies. Second, the securities of large companies are more liquid and are available in large quantities. Third, institutional investors prefer successful, well-known companies because it is

TABLE 5.5 Australian Share Portfolio Fund (ASP)

ASP adheres to the traditional approach to Australian portfolio management. Typically these funds hold 20 to 35 company investments and endeavour to beat the S&P ASX 200 Index over a rolling five-year period. Top 10 holdings and its industry coverage for such a fund might appear as shown below.

Top 10 Shares	%
BHP Billiton (BHP)	13.10
Telstra Corporation (TLS)	5.90
Australia and New Zealand Banking Group (ANZ)	5.63
Westpac Banking Corporation (WBC)	5.30
National Australia Bank (NAB)	5.10
Australian Mutual Provident (AMP)	4.83
News Corporation (NWS)	4.75
Orica (ORI)	3.62
Rio Tinto (RIO)	3.32
Westfield Group (WDC)	3.20

Industry Coverage	%
Financial services	34
Industry materials	20
Media	8
Health care	7
Telecommunications	6
Consumer goods	6
Utilities	4
Business services	4
Energy	3
Consumer goods	2

(*Note:* The figures above are all hypothetical.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

easier to convince clients to invest in them. Called *window dressing,* this practice of loading up a portfolio with successful, well-known shares makes it easier for institutional investors to sell their services.

One tendency often attributed to institutional investors during recent years is that of 'herding'—investing in securities similar to those held by their competitors. These institutional investors effectively mimic the actions of their competitors. In the case of ASP, for example, its managers would buy shares in companies that are held by other top managed funds. And sometimes they will overweight (in relation to ASX proportion share) in certain companies which they consider to have sounder prospects. While we really don't always know why managers buy specific shares, it is clear that funds with similar objectives hold many of the same well-known shares.

Modern Portfolio Theory

During the 1950s, Harry Markowitz, a trained mathematician, first developed the theories that form the basis of modern portfolio theory. Many other scholars and investment experts have contributed to the theory in the intervening years since. **Modern portfolio theory** (**MPT**) utilises several basic statistical measures to develop a portfolio plan. Included are *expected returns* and *standard deviations of returns* for both securities and portfolios, and the *correlation between returns*. According to MPT, diversification is achieved by combining securities in a portfolio *in such a way that individual securities have negative (or low-positive) correlations between each other's rates of return*. Thus, the statistical diversification is the deciding factor in choosing securities for an MPT portfolio. Two important aspects of MPT are the *efficient frontier* and *portfolio betas*.

modern portfolio theory (MPT)
an approach to portfolio management that uses several basic statistical measures to develop a portfolio plan.

The Efficient Frontier At any point in time, you are faced with virtually hundreds of investments from which to choose. You can form any number of possible portfolios. In fact, using only, say, 10 different assets, you could create hundreds of portfolios by changing the proportion of each asset in the portfolio.

If we were to create all possible portfolios, calculate the return and risk of each, and plot each risk–return combination on a set of risk–return axes, we would have the *feasible* or *attainable set* of all possible portfolios. This set is represented by the shaded area in Figure 5.7 (on page 152). It is the area bounded by ABYOZCDEF. As defined earlier, an *efficient portfolio* is a portfolio that provides the highest return for a given level of risk. For example, let's compare portfolio T to portfolios B and Y shown in Figure 5.7. Portfolio Y appears preferable to portfolio T because it has a higher return for the same level of risk. Portfolio B also 'dominates' portfolio T because it has lower risk for the same level of return.

The boundary BYOZC of the feasible set of portfolios represents *all efficient portfolios*—those portfolios that provide the best tradeoff between risk and return. This boundary is called the **efficient frontier**. *All portfolios on the efficient frontier are preferable to all other portfolios in the feasible set.* Any portfolios that would fall to the left of the efficient frontier are not available for investment, because they fall outside of the attainable set. Portfolios that fall to the right of the efficient frontier are *not desirable,* because their risk–return tradeoffs are inferior to those of portfolios on the efficient frontier.

efficient frontier
the leftmost boundary of the feasible (attainable) set of portfolios that includes all efficient portfolios—those providing the best attainable tradeoff between risk (measured by the standard deviation) and return.

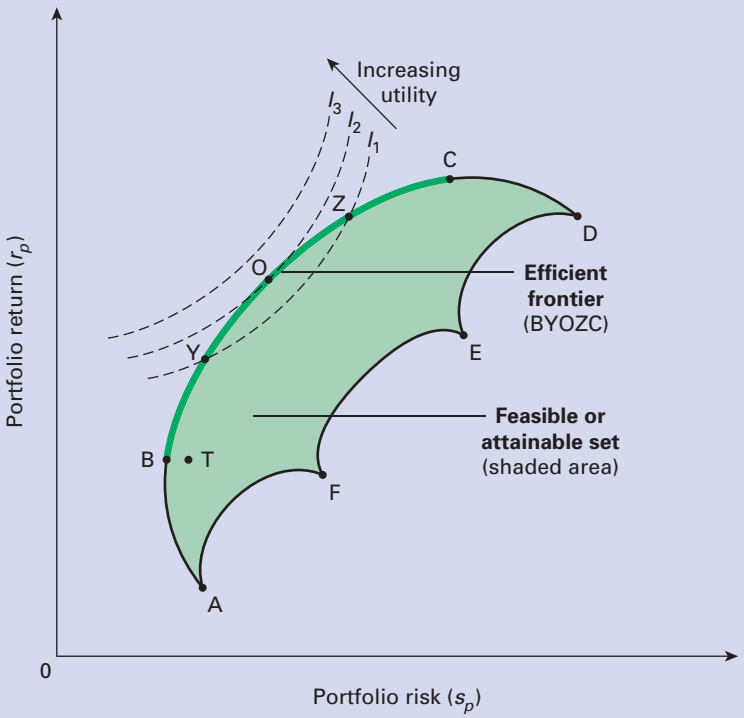
We can, in theory, use the efficient frontier to find the highest level of satisfaction the investor can achieve given the available set of portfolios. To do this, we would plot on the risk–return axes an *investor's utility function,* or *risk-indifference curves*. These

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 5.7

The Feasible or Attainable Set and the Efficient Frontier

The *feasible* or *attainable set* (shaded area) represents the risk–return combinations attainable with all possible portfolios; the *efficient frontier* is the locus of all efficient portfolios. The point O where the investor's highest possible indifference curve is tangent to the efficient frontier is the optimal portfolio. It represents the highest level of satisfaction the investor can achieve given the available set of portfolios.



curves indicate, for a given level of utility (satisfaction), the set of risk–return combinations among which an investor would be indifferent. These curves, labelled I_1, I_2 and I_3 in Figure 5.7, reflect increasing satisfaction as we move from I_1 to I_2 to I_3. The optimal portfolio, O, is the point at which indifference curve I_2 meets the efficient frontier. The higher utility provided by I_3 cannot be achieved given the best available portfolios represented by the efficient frontier.

When coupled with a risk-free asset, the efficient frontier can be used to develop the *capital asset pricing model* (introduced earlier) in terms of portfolio risk (measured by the standard deviation, s_p) and return (r_p). Rather than focus further on theory, let's shift our attention to the more practical aspects of the efficient frontier and its extensions. To do so, we consider the use of *portfolio betas*.

Portfolio Betas As we have noted, investors strive to diversify their portfolios by including a variety of non-complementary investment vehicles so as to reduce risk while meeting return objectives. Remember that investment vehicles embody two basic types of risk: (1) *diversifiable risk*, the risk unique to a particular investment vehicle, and (2) *non-diversifiable risk*, the risk possessed by every investment vehicle.

A great deal of research has been conducted on the topic of risk as it relates to security investments. The results show that, in general, *to earn more return, you must bear more risk*. More startling, however, are research results showing that only with non-diversifiable risk is there a positive risk–return relationship. High levels of *diversifiable risk* do not result in correspondingly high levels of return. Because there is no reward for bearing diversifiable risk, investors should minimise this form of risk by diversifying the portfolio so that only non-diversifiable risk remains.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Risk Diversification As we've seen, diversification minimises diversifiable risk by offsetting the below-average return on one vehicle with the above-average return on another. Minimising diversifiable risk through careful selection of investment vehicles requires that the vehicles chosen for the portfolio come from a wide range of industries.

To understand better the effect of diversification on the basic types of risk, let's consider what happens when we begin with a single asset (security) in a portfolio and then expand the portfolio by randomly selecting additional securities. Using the standard deviation, s_p, to measure the portfolio's *total risk*, we can depict the behaviour of the total portfolio risk as more securities are added, as shown in Figure 5.8. As we add securities to the portfolio (x-axis), the total portfolio risk (y-axis) declines because of the effects of diversification, but there is a limit to how much risk reduction can be achieved.

On average, most of the risk-reduction benefits of diversification can be gained by forming portfolios containing eight to 15 carefully selected securities, but our recommendation is to hold 40 securities or more to achieve efficient diversification. This suggestion tends to support the popularity of investment in managed funds.

relevant risk
risk that is non-diversifiable.

Because any investor can create a portfolio of assets that will eliminate virtually all diversifiable risk, the only **relevant risk** is that which is non-diversifiable. You must therefore be concerned solely with non-diversifiable risk. The measurement of non-diversifiable risk is thus of primary importance.

Calculating Portfolio Betas As we saw earlier, *beta* measures the *nondiversifiable* or *relevant risk* of a security. The beta for the market is equal to 1.00. Securities with betas greater than 1.00 are more risky than the market, and those with betas less than 1.00 are less risky than the market. The beta for the risk-free asset is 0.

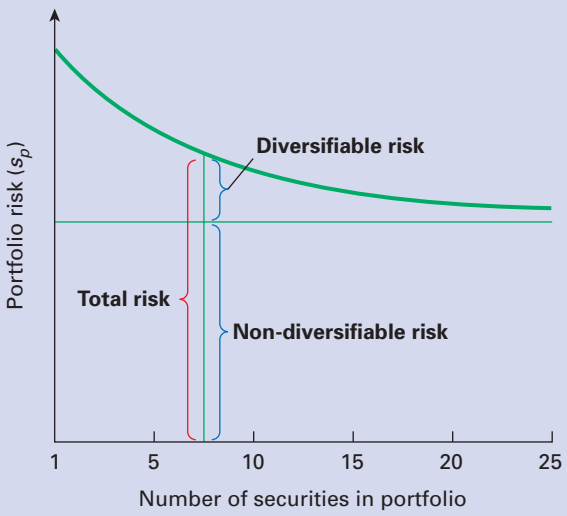
portfolio beta, β_p
the beta of a portfolio; calculated as the weighted average of the betas of the individual assets that make up the portfolio.

The **portfolio beta**, β_p, is merely the weighted average of the betas of the individual assets it includes. It can be easily estimated using the betas of the component assets. To find the portfolio beta, β_p, we can use Equation 5.4.

FIGURE 5.8

Portfolio Risk and Diversification

As more securities are combined to create a portfolio, the total risk of the portfolio (measured by its standard deviation, s_p) declines. The portion of the risk eliminated is the *diversifiable risk;* the remaining portion is the *non-diversifiable* or *relevant risk.*



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Equation 5.4

$$\text{Portfolio beta} = \left(\begin{array}{c}\text{Proportion of portfolio's total dollar value asset 1}\end{array} \times \begin{array}{c}\text{Beta for asset 1}\end{array}\right) + \left(\begin{array}{c}\text{Proportion of portfolio's total dollar value asset 2}\end{array} \times \begin{array}{c}\text{Beta for asset 2}\end{array}\right) + \ldots +$$

$$\left(\begin{array}{c}\text{Proportion of portfolio's total dollar value asset } n\end{array} \times \begin{array}{c}\text{Beta for asset } n\end{array}\right) = \sum_{j=1}^{n}\left(\begin{array}{c}\text{Proportion of portfolio's total dollar value asset } j\end{array} \times \begin{array}{c}\text{Beta for asset } j\end{array}\right)$$

Equation 5.4a

$$\beta_p = (w_1 \times \beta_1) + (w_2 \times \beta_2) + \cdots + (w_n \times \beta_n) = \sum_{j=1}^{n}(w_j \times \beta_j)$$

Of course, $\sum_{j=1}^{n} w_j = 1$, which means that 100% of the portfolio's assets must be included in this computation.

Interpreting Portfolio Betas Portfolio betas are interpreted in exactly the same way as individual asset betas. They indicate the degree of responsiveness of the *portfolio's* return to changes in the market return. For example, when the market return increases by 10%, a portfolio with a beta of 0.75 will experience a 7.5% increase in its return $(0.75 \times 10\%)$. A portfolio with a beta of 1.25 will experience a 12.5% increase in its return $(1.25 \times 10\%)$. Low-beta portfolios are less responsive, and therefore less risky, than high-beta portfolios. Clearly, a portfolio containing mostly low-beta assets will have a low beta, and vice versa.

To demonstrate, consider the Austin Fund, a large investment company that wishes to assess the risk of two portfolios, V and W. Both portfolios contain five assets, with the proportions and betas shown in Table 5.6. We can calculate the betas for portfolios V and W, β_V and β_W, by substituting the appropriate data from the table into Equation 5.4, as follows.

$$\begin{aligned}\beta_V &= (0.10 \times 1.65) + (0.30 \times 1.00) + (0.20 \times 1.30) + (0.20 \times 1.10) + (0.20 \times 1.25)\\ &= 0.165 + 0.300 + 0.260 + 0.220 + 0.250 = 1.195 \approx \underline{\underline{1.20}}\end{aligned}$$

$$\begin{aligned}\beta_W &= (0.10 \times 0.80) + (0.10 \times 1.00) + (0.20 \times 0.65) + (0.10 \times 0.75) + (0.50 \times 1.05)\\ &= 0.080 + 0.100 + 0.130 + 0.075 + 0.525 = \underline{\underline{0.91}}\end{aligned}$$

Portfolio V's beta is 1.20, and portfolio W's is 0.91. These values make sense because portfolio V contains relatively high-beta assets and portfolio W contains relatively low-beta assets. Clearly, portfolio V's returns are more responsive to changes in market returns—and therefore more risky—than portfolio W's.

TABLE 5.6 Austin Fund's Portfolios V and W

	Portfolio V		Portfolio W	
Asset	Proportion	Beta	Proportion	Beta
1	0.10	1.65	0.10	0.80
2	0.30	1.00	0.10	1.00
3	0.20	1.30	0.20	0.65
4	0.20	1.10	0.10	0.75
5	0.20	1.25	0.50	1.05
Total	1.00		1.00	

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

If a portfolio has a beta of +1.00, the portfolio experiences changes in its rate of return equal to changes in the market's rate of return. The +1.00 beta portfolio would tend to experience a 10% increase in return if the sharemarket as a whole experienced a 10% increase in return. Conversely, if the market return fell by 6%, the return on the +1.00 beta portfolio would also fall by 6%.

Table 5.7 lists the expected returns for three portfolio betas in two situations: an increase in market return of 10% and a decrease in market return of 10%. The 2.00 beta portfolio is twice as volatile as the market. When the market return increases by 10%, the portfolio return increases by 20%. When the market return declines by 10%, the portfolio's return will fall by 20%. This portfolio would be considered a high-risk, high-return portfolio.

The middle, 0.50 beta portfolio is considered a low-risk, low-return portfolio. This would be a conservative portfolio for investors who wish to maintain a low-risk investment posture. The 0.50 beta portfolio is half as volatile as the market.

A portfolio with a beta of −1.00 moves in the opposite direction from the market. A bearish investor would probably want to own a negative-beta portfolio, because this type of investment tends to rise in value when the sharemarket declines, and vice versa. Finding securities with negative betas is difficult, however. Most securities have positive betas, because they tend to experience return movements in the same direction as changes in the share market.

The Risk–Return Tradeoff: Some Closing Comments Another valuable outgrowth of modern portfolio theory is the specific link between non-diversifiable risk and investment return. The basic premise is that an investor must have a portfolio of relatively risky investments to earn a relatively high rate of return. That relationship is illustrated in Figure 5.9. The upward-sloping line shows the **risk–return tradeoff**. The point where the risk–return line crosses the return axis is called the **risk-free rate, R_F**. This is the return an investor can earn on a risk-free investment such as a Treasury note or a money market deposit account in a major bank.

risk–return tradeoff
the positive relationship between the risk associated with a given investment and its expected return.

risk-free rate, R_F
the return an investor can earn on a risk-free investment such as a Commonwealth Treasury note.

As we proceed upwards along the risk–return tradeoff line, portfolios of risky investments appear, as depicted by four investment portfolios, A through D. Portfolios A and B are investment opportunities that provide a level of return commensurate with their respective risk levels. Portfolio C provides a high return at a relatively low risk level—and therefore would be an excellent investment. Portfolio D, in contrast, offers high risk but low return—an investment to avoid.

Reconciling the Traditional Approach and MPT

We have reviewed two fairly different approaches to portfolio management: the traditional approach and MPT. The question that naturally arises is: Which technique

TABLE 5.7 Portfolio Betas and Associated Changes in Returns

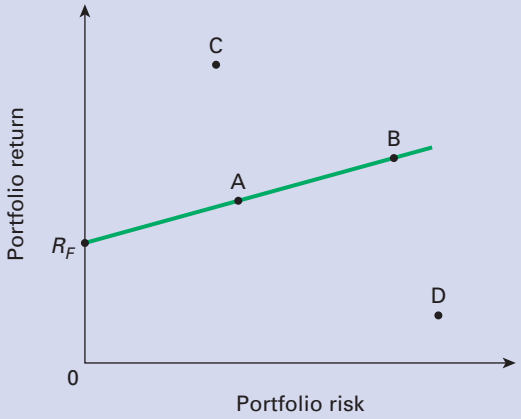
Portfolio Beta	Changes in Market Return	Change in Expected Portfolio Return
+2.00	+10.0%	+20.0%
	−10.0	−20.0
+0.50	+10.0	+5.0
	−10.0	−5.0
+1.00	+10.0	−10.0
	−10.0	+10.0

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 5.9

The Portfolio Risk–Return Tradeoff

As the risk of an investment portfolio increases from zero, the return provided should increase above the risk-free rate, R_F. Portfolios A and B offer returns commensurate with their risk, portfolio C provides a high return at a low-risk level, and portfolio D provides a low return for high risk. Portfolio C is highly desirable; portfolio D should be avoided.



should you use? There is no definite answer; the question must be resolved by the judgment of each investor. However, we can offer a few useful ideas.

The average individual investor does not have the resources, computers and mathematical acumen to implement a total MPT portfolio strategy. But most individual investors can extract and use ideas from *both* the traditional and MPT approaches. The traditional approach stresses security selection, which is discussed in Chapters 7 and 8. It also emphasises diversification of the portfolio across industry lines. MPT stresses reducing correlations between rates of return for the securities within the portfolio. This approach calls for diversification to minimise diversifiable risk. Thus, diversification must be accomplished to ensure satisfactory performance with either strategy. Also, beta is a useful tool for determining the level of a portfolio's nondiversifiable risk and should be part of the decision-making process.

We recommend the following portfolio management policy, which uses aspects of both approaches:

- Determine how much risk you are willing to bear.
- Seek diversification among different types of securities and across industry lines, and pay attention to how the return from one security is related to that from another.
- Consider how a security responds to the market, and use beta in diversifying your portfolio as a way to keep the portfolio in line with your acceptable level of risk.
- Evaluate alternative portfolios to make sure that the portfolio selected provides the highest return for the given level of acceptable risk.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

5.12 Describe *traditional portfolio management*. Give three reasons why traditional portfolio managers like to invest in well-established companies.

5.13 What is *modern portfolio theory (MPT)*? What is the *feasible* or *attainable set* of all possible portfolios? How is it derived for a given group of investment vehicles?

5.14 What is the *efficient frontier*? How is it related to the attainable set of all possible portfolios? How can it be used with an investor's utility function to find the optimal portfolio?

5.15 Define and differentiate among the diversifiable, non-diversifiable, and total risk of a portfolio. Which is considered the *relevant risk*? How is it measured?

5.16 Define *beta*. How can you find the beta of a portfolio when you know the beta for each of the assets included within it?

5.17 Explain how you can reconcile the traditional and modern portfolio approaches.

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Understand portfolio management and the procedures used to calculate the return and standard deviation of a portfolio. A portfolio is a collection of investments assembled to achieve one or more investment goals. It produces potential price appreciation and current income, subject to a tradeoff between risk and return. The return on a portfolio is calculated as a weighted average of the returns of the assets from which it is formed. The standard deviation of a portfolio's returns is found by applying the same formula that is used to find the standard deviation of a single asset.

LG 2 Discuss the concepts of correlation and diversification, and the effectiveness, methods and benefits of international diversification. Correlation is a statistic used to measure the relationship, if any, between the returns on assets. To diversify, it is best to add assets with negatively correlated returns. In general, the less positive and more negative the correlation between asset returns, the more effectively a portfolio can be diversified to reduce its risk. Diversification can reduce the risk (standard deviation) of a portfolio below the risk of the least risky asset (sometimes to zero). The return of the resulting portfolio will be no lower than the smallest return of its component assets. For any two-asset portfolio, the ability to reduce risk depends on both the degree of correlation and proportion of each asset in the portfolio.

International diversification may allow an investor to reduce portfolio risk without necessarily imposing a corresponding reduction in return. It can be achieved by investing abroad or through domestic investment in foreign companies or funds, but it typically cannot be achieved by investing in Australian multinationals. The preferred method of international diversification for individual investors is the use of international managed funds available in Australia. Although opportunities to earn 'excess' returns in international investments are diminishing over time, they continue to be effective diversification vehicles.

Key Terms

efficient portfolio, *p. 134*
growth-oriented portfolio, *p. 134*
income-oriented portfolio, *p. 134*

correlation, *p. 136*
correlation coefficient, *p. 137*
negatively correlated, *p. 136*
perfectly negatively correlated, *p. 137*
perfectly positively correlated, *p. 137*
positively correlated, *p. 136*
uncorrelated, *p. 137*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 3 Describe the components of risk and the use of beta to measure risk. The two basic components of total risk are diversifiable (unsystematic) and non-diversifiable (systematic) risk. Non-diversifiable risk is the relevant risk. Beta measures the non-diversifiable, or market, risk associated with a security investment. It is derived from the historical relationship between a security's return and the market return.	beta, *p. 144* diversifiable (unsystematic) risk, *p. 144* market return, *p. 144* non-diversifiable (systematic) risk, *p. 144* total risk, *p. 144*
LG 4 Explain the capital asset pricing model (CAPM)—conceptually, mathematically and graphically. The capital asset pricing model (CAPM) relates risk (as measured by beta) to return. It can be divided into two parts: (1) the risk-free rate of return, R_F, and (2) the risk premium, $\beta \times (r_m - R_F)$. The graphic depiction of the CAPM is the security market line (SML). The CAPM reflects increasing required returns for increasing risk.	capital asset pricing model (CAPM), *p. 147* security market line (SML), *p. 148*
LG 5 Review the traditional and modern approaches to portfolio management. The traditional approach constructs portfolios by combining a large number of securities issued by companies from a broad cross-section of industries. Modern portfolio theory (MPT) uses statistical diversification to develop efficient portfolios. To determine the optimal portfolio, MPT finds the efficient frontier and couples it with an investor's risk-indifference curves.	efficient frontier, *p. 151* modern portfolio theory (MPT), *p. 151* portfolio beta, b_p, *p. 153* relevant risk, *p. 153* risk–return tradeoff, *p. 155* risk-free rate, R_F, *p. 155* traditional portfolio management, *p. 150*
LG 6 Describe portfolio betas, the risk–return tradeoff, and reconciliation of the two approaches to portfolio management. In practice, portfolio betas can be used to develop efficient portfolios consistent with the investor's risk–return preferences. Portfolio betas are merely a weighted average of the betas of the individual assets included in the portfolio. Generally, investors use elements of both the traditional approach and MPT to create portfolios. This approach involves determining how much risk you are willing to bear, seeking diversification, using beta to diversify your portfolio, and evaluating alternative portfolios to select the one that offers the highest return for an acceptable level of risk.	

Discussion Questions

LG 1

Q5.1 State your portfolio objectives. Then construct a 10-share portfolio that you feel is consistent with your objectives. (Use companies that have been public for at least five years.) Obtain annual dividend and price data for each of the past five years.

a. Calculate the historical return for each share for each year.

b. Calculate the historical portfolio return for each of the five years, using your findings in part **a**.

c. Use your findings in part **b** to calculate the average portfolio return over the five years.

d. Use your findings in parts **b** and **c** to find the standard deviation of the portfolio's returns over the five-year period.

e. Use the historical average return from part **c** and the standard deviation from part **d** to evaluate the portfolio's return and risk in light of your stated portfolio objectives.

LG 2

Q5.2 Using the following guidelines, choose the shares—A, B and C—of three companies that have been public for at least 10 years. Share A should be one you are interested in buying. Share B should be a share, possibly in the same line of business or industry, that you feel will have the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

lowest possible return correlation with share A. Share C should be one you feel will have the highest possible return correlation with share A.

a. Calculate the annual rates of return for each of the past 10 years for each share.
b. Plot the 10 annual return values for each share on the same set of axes, where the *x*-axis is the year and the *y*-axis is the annual return in percentage terms.
c. Join the points for the returns for each share on the graph. Evaluate and describe the returns of share A and B in the graph. Do they exhibit the expected positive correlation? Why or why not?
d. Evaluate and describe the relationship between the returns of share A and C in the graph. Do they exhibit negative correlation? Why or why not?
e. Compare and contrast your findings in parts **c** and **d** to the expected relationships among shares A, B and C. Discuss your findings.

LG3

Q5.3 From the *Australian Financial Review*, a website such as Yahoo!7 Finance (http://au.finance.yahoo.com), or some other source, obtain a current estimate of the risk-free rate (use a Treasury note). Use Yahoo!7 Finance to obtain the beta for each of the following three shares:

- AGL (utilities)
- Woolworths (groceries)
- Westpac (financial services).

Use the information you gathered, along with the market risk premium on large shares given in the chapter, to find the required return for each share with the capital asset pricing model (CAPM).

LG3 LG4

Q5.4 From the *Australian Financial Review*, a website such as Yahoo!7 Finance (http://au.finance.yahoo.com), or some other source, obtain a current estimate of the risk-free rate (use a Treasury note). Use Yahoo!7 Finance to obtain the beta for each of the companies listed on page 146.

a. Compare the current betas to the April 2010 betas given in the chapter for each of the companies.
b. What might cause betas to change over time, even in a stable economic environment?
c. Use the current betas, along with a market risk premium on shares of 8.5%, to find the required return for each share with the capital asset pricing model (CAPM).
d. Compare and discuss your findings in part **c** with regard to the specific business that each company is in.

LG2 LG5 LG6

Q5.5 Obtain a product disclosure statement and an annual report for a major managed fund that includes some international securities. Carefully read the reports and study the portfolio's composition in light of the fund's stated objectives.

a. Evaluate the amount of diversification and the types of industries and companies held. Is the portfolio well diversified?
b. Discuss the additional risks faced by an investor in this fund compared to an investor in a domestic share portfolio such as the S&P ASX 200.

LG6

Q5.6 Use a published source to select four shares with betas ranging from about 0.50 to 1.50. Record the current market prices of each of these shares. Assume you wish to create a portfolio that combines all four shares in such a way that the resulting portfolio beta is about 1.10.

a. Through trial and error, use all four shares to create a portfolio with the target beta of 1.10.
b. If you have $100 000 to invest in this portfolio, on the basis of the weightings determined in part **a**, what dollar amounts would you invest in each share?
c. Approximately how many shares of each would you buy, given the dollar amounts calculated in part **b**?
d. Repeat parts **a**, **b** and **c** with a different set of weightings that still result in a portfolio beta of 1.10. Can only one unique portfolio with a given beta be created from a given set of shares?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG1

P5.1 Your portfolio had the values in the following table for the four-year period listed. Calculate your average return over the four-year period.

Year	Beginning Value	Ending Value
2007	$50 000.00	$55 000.00
2008	$55 000.00	$58 000.00
2009	$58 000.00	$65 000.00
2010	$65 000.00	$70 000.00

LG1

P5.2 Using your data from Problem 5.1 above, calculate the portfolio standard deviation.

LG1 LG2

P5.3 Assume you are considering a portfolio containing two assets, L and M. Asset L will represent 40% of the dollar value of the portfolio, and asset M will account for the other 60%. The expected returns over the next six years, 2012–2017, for each of these assets are summarised in the following table.

	Expected Return (%)	
Year	Asset L	Asset M
2012	14	20
2013	14	18
2014	16	16
2015	17	14
2016	17	12
2017	19	10

a. Calculate the expected portfolio return, $\bar{r}_p$, for each of the six years.
b. Calculate the average expected portfolio return, $\bar{r}_p$, over the six-year period.
c. Calculate the standard deviation of expected portfolio returns, s_p, over the six-year period.
d. How would you characterise the correlation of returns of the two assets L and M?
e. Discuss any benefits of diversification achieved through creation of the portfolio.

LG1 LG2

P5.4 Refer to Problem 5.3. Assume that asset L represents 60% of the portfolio and asset M 40%. Calculate the average expected return and standard deviation of expected portfolio returns over the six-year period. Compare your answers to the answers from Problem 5.3.

LG1 LG2

P5.5 You have been given the following return data on three assets—F, G and H—over the period 2012–2015.

	Expected Return (%)		
Year	Asset F	Asset G	Asset H
2012	16	17	14
2013	17	16	15
2014	18	15	16
2015	19	14	17

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Using these assets, you have isolated three investment alternatives:

Alternative	Investment
1	100% of asset F
2	50% of asset F and 50% of asset G
3	50% of asset F and 50% of asset H

a. Calculate the portfolio return over the four-year period for each of the three alternatives.
b. Calculate the standard deviation of returns over the four-year period for each of the three alternatives.
c. On the basis of your findings in parts **a** and **b**, which of the three investment alternatives would you recommend? Why?

LG1 LG2 **P5.6** You have been asked for your advice in selecting a portfolio of assets and have been supplied with the following data.

	Expected Return (%)		
Year	Asset A	Asset B	Asset C
2012	12	16	12
2013	14	14	14
2014	16	12	16

You have been told that you can create two portfolios—one consisting of assets A and B and the other consisting of assets A and C—by investing equal proportions (50%) in each of the two component assets.

a. What is the average expected return, $\bar{r}$, for each asset over the three-year period?
b. What is the standard deviation, s, for each asset's expected return?
c. What is the average expected return, $\bar{r}_p$, for each of the two portfolios?
d. How would you characterise the correlations of returns of the two assets making up each of the two portfolios identified in part **c**?
e. What is the standard deviation of expected returns, s_p, for each portfolio?
f. Which portfolio do you recommend? Why?

LG1 LG2 **P5.7** Referring to Problem 5.6, what would happen if you constructed a portfolio consisting of assets A, B and C, equally weighted? Would this reduce risk or enhance return?

LG1 LG2 **P5.8** Assume you wish to evaluate the risk and return behaviours associated with various combinations of assets V and W under three assumed degrees of correlation: perfect positive, uncorrelated and perfect negative. The following average return and risk values were calculated for these assets.

Asset	Average Return, $\bar{r}$ (%)	Risk (Standard Deviation), s (%)
V	8	5
W	13	10

a. If the returns of assets V and W are *perfectly positively correlated* (correlation coefficient = +1), describe the *range* of (1) return and (2) risk associated with all possible portfolio combinations.
b. If the returns of assets V and W are *uncorrelated* (correlation coefficient = 0), describe the *approximate range* of (1) return and (2) risk associated with all possible portfolio combinations.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

c. If the returns of assets V and W are *perfectly negatively correlated* (correlation coefficient = −1), describe the *range* of (1) return and (2) risk associated with all possible portfolio combinations.

LG3 **P5.9** Imagine you wish to estimate the betas for two investments, A and B. You have gathered the following return data for the market and for each of the investments over the past 10 years, 2002–2011.

a. On a set of market return (*x*-axis)–investment return (*y*-axis) axes, use the data to draw the characteristic lines for investments A and B on the same set of axes.

b. Use the characteristic lines from part **a** to estimate the betas for investments A and B.

c. Use the betas found in part **b** to comment on the relative risks of investments A and B.

	Historical Returns		
	Investment		
Year	Market	A	B
2002	6%	11%	16%
2003	2	8	11
2004	−13	−4	−10
2005	−4	3	3
2006	−8	0	−3
2007	16	19	30
2008	10	14	22
2009	15	18	29
2010	8	12	19
2011	13	17	26

LG3 **P5.10** You are evaluating two possible share investments, Buyme Ltd and Getit Ltd. Buyme has an expected return of 14% and a beta of 1. Getit has an expected return of 14% and a beta of 1.2. Based only on this data, which share should you buy and why?

LG3 **P5.11** Referring to Problem 5.10, if you expected a significant market rally, would your decision be altered? Explain.

LG3 **P5.12** A security has a beta of 1.20. Is this security more or less risky than the market? Explain. Assess the impact on the required return of this security in each of the following cases.

a. The market return increases by 15%.

b. The market return decreases by 8%.

c. The market return remains unchanged.

LG3 **P5.13** Assume the betas for securities A, B and C are as shown here.

Security	Beta
A	1.40
B	0.80
C	−0.90

a. Calculate the change in return for each security if the market experiences an increase in its rate of return of 13.2% over the next period.

b. Calculate the change in return for each security if the market experiences a decrease in its rate of return of 10.8% over the next period.

c. Rank and discuss the relative risk of each security on the basis of your findings. Which security might perform best during an economic downturn? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG3 LG6 **P5.14** Referring to Problem 5.13, assume you have a portfolio with $20 000 invested in each of investment A, B and C. What is your portfolio beta?

LG3 LG6 **P5.15** Referring to Problem 5.14, using the portfolio beta, what would you expect the value of your portfolio to be if the market rallied 20%? Declined 20%?

LG4 **P5.16** Use the capital asset pricing model (CAPM) to find the required return for each of the following securities in light of the data given.

Security	Risk-free Rate	Market Return	Beta
A	5%	8%	1.30
B	8	13	0.90
C	9	12	−0.20
D	10	15	1.00
E	6	10	0.60

LG4 **P5.17** Jay is reviewing his portfolio of investments, which include certain shares and bonds. He has a large amount tied up in Treasury notes paying 3%. He is considering moving some of his funds from the T-notes into shares. The share has a beta of 1.25. If Bob expects a return of 14% from the share (a little better than the current market return of 13%), should he buy the share or leave his funds in the T-note?

LG4 **P5.18** The risk-free rate is currently 7%, and the market return is 12%. Assume you are considering the following investments.

Investment Vehicle	Beta
A	1.50
B	1.00
C	0.75
D	0
E	2.00

a. Which vehicle is most risky? Least risky?
b. Use the capital asset pricing model (CAPM) to find the required return on each of the investment vehicles.
c. Draw the security market line (SML), using your findings in part **b**.
d. On the basis of your findings in part **c**, what relationship exists between risk and return? Explain.

LG5 LG6 **P5.19** Portfolios A through J, which are listed in the following table along with their returns (r_p) and risk (measured by the standard deviation, s_p), represent all currently available portfolios in the feasible or attainable set.

Portfolio	Return (r_p)	Risk (s_p)
A	9%	8%
B	3	3
C	14	10
D	12	14
E	7	11
F	11	6
G	10	12
H	16	16
I	5	7
J	8	4

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

a. Plot the *feasible* or *attainable set* represented by these data on a set of portfolio risk, s_p (x-axis)–portfolio return, r_p (y-axis) axes.
b. Draw the *efficient frontier* on the graph in part **a**.
c. Which portfolios lie on the efficient frontier? Why do these portfolios dominate all others in the feasible or attainable set?
d. How would an investor's *utility function* or *risk-indifference curves* be used with the efficient frontier to find the optimal portfolio?

LG5 LG6

P5.20 For his portfolio, Jack Cashman randomly selected securities from all those listed on the ASX. He began with one security and added securities one by one until a total of 20 securities were held in the portfolio. After each security was added, Jack calculated the portfolio standard deviation, s_p. The calculated values follow.

Number of Securities	Portfolio Risk, s_p (%)	Number of Securities	Portfolio Risk, s_p (%)
1	14.50	11	7.00
2	13.30	12	6.80
3	12.20	13	6.70
4	11.20	14	6.65
5	10.30	15	6.60
6	9.50	16	6.56
7	8.80	17	6.52
8	8.20	18	6.50
9	7.70	19	6.48
10	7.30	20	6.47

a. On a set of axes showing the number of securities in the portfolio (x-axis) and portfolio risk, s_p (y-axis), plot the portfolio risk data given in the preceding table.
b. Divide the total portfolio risk in the graph into its *non-diversifiable* and *diversifiable* risk components, and label each of these on the graph.
c. Describe which of the two risk components is the *relevant risk*, and explain why it is relevant. How much of this risk exists in Jack Cashman's portfolio?

LG3 LG6

P5.21 If portfolio A has a beta of +1.50 and portfolio Z has a beta of −1.50, what do the two values indicate? If the return on the market rises by 20%, what impact, if any, would this have on the returns from portfolios A and Z? Explain.

LG3 LG6

P5.22 Share A has a beta of 0.80, share B has a beta of 1.40, and share C has a beta of –0.30.
a. Rank these shares from the most risky to the least risky.
b. If the return on the market portfolio increases by 12%, what change in the return for each of the shares would you expect?
c. If the return on the market portfolio declines by 5%, what change in the return for each of the shares would you expect?
d. If you felt the shares market was about to experience a significant decline, which share would you be most likely to add to your portfolio? Why?
e. If you anticipated a major sharemarket rally, which share would you be most likely to add to your portfolio? Why?

LG6

P5.23 Jeanne Lewis is attempting to evaluate two possible portfolios consisting of the same five assets but held in different proportions. She is particularly interested in using beta to compare the risk of the portfolios and, in this regard, has gathered the following data:

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

		Portfolio Weights (%)	
Asset	Asset Beta	Portfolio A	Portfolio B
1	1.30	10	30
2	0.70	30	10
3	1.25	10	20
4	1.10	10	20
5	0.90	40	20
Total		100	100

a. Calculate the betas for portfolios A and B.
b. Compare the risk of each portfolio to the market as well as to each other. Which portfolio is more risky?

LG4 **P5.24** Referring to Problem 5.23, if the risk-free rate is 2% and the market return is 12%, calculate the required return for each portfolio using the CAPM.

LG5 LG6 **P5.25** Referring to Problem 5.24, assume you now have the following annual returns (r_j) for each investment.

Asset (j)	r_j
1	16.5%
2	12.0%
3	15.0%
4	13.0%
5	7.0%

Using your finding from Problem 5.24 and the additional return data, determine which portfolio you would choose and explain why.

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 5.1 TRADITIONAL VERSUS MODERN PORTFOLIO THEORY: WHO'S RIGHT?

LG5 LG6 Wal Davies and Shane O'Brien are district managers for Lee Ltd. Over the years, as they moved through the company's sales organisation, they became (and still remain) close friends. Wal, who is 33 years old, currently lives in Sydney. Shane, who is 35, lives in Melbourne. Recently, at the national sales meeting, they were discussing various company matters, as well as bringing each other up to date on their families, when the subject of investments came up. Each had always been fascinated by the sharemarket, and now that they had achieved some degree of financial success, they had begun actively investing.

As they discussed their investments, Wal said he felt the only way an individual who does not have hundreds of thousands of dollars can invest safely is to buy managed fund shares. He emphasised that to be safe, a person needs to hold a broadly diversified portfolio and that only those with a lot of money and time can achieve independently the diversification that can be readily obtained by purchasing managed fund shares.

Shane totally disagreed. He said, 'Diversification! Who needs it?' He felt that what one must do is look carefully at shares possessing desired risk–return characteristics and then invest all one's money in the single best share. Wal told him he was crazy. He said, 'There is no way to measure risk conveniently—you're just gambling'. Shane disagreed. He explained how his stockbroker had acquainted him with beta, which is a measure of risk. Shane said that the higher the beta, the more risky the share, and therefore the higher its return. By looking up the betas for

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

potential share investments on the Internet, he can pick shares that have an acceptable risk level for him. Shane explained that with beta, one does not need to diversify; one merely needs to be willing to accept the risk reflected by beta and then hope for the best.

The conversation continued, with Wal indicating that although he knew nothing about beta, he didn't believe one could safely invest in a single share. Shane continued to argue that his broker had explained to him that betas can be calculated not just for a single share but also for a portfolio of shares, such as a managed fund. He said, 'What's the difference between a share with a beta of, say, 1.20 and a managed fund with a beta of 1.20? They both have the same risk and should therefore provide similar returns.'

As Wal and Shane continued to discuss their differing opinions relative to investment strategy, they began to get angry with each other. Neither was able to convince the other that he was right. The level of their voices now raised, they attracted the attention of the company head of finance, Ellen Green, who was standing nearby. She came over and indicated she had overheard their argument about investments and thought that, given her expertise on financial matters, she might be able to resolve their disagreement. She asked them to explain the crux of their disagreement, and each reviewed his own viewpoint. After hearing their views, Ellen responded, 'I have some good news and some bad news for each of you. There is some validity to what each of you says, but there also are some errors in each of your explanations. Wal tends to support the traditional approach to portfolio management. Shane's views are more supportive of modern portfolio theory.' Just then, the company CEO interrupted them, needing to talk to Ellen immediately. Ellen apologised for having to leave and offered to continue their discussion later that evening.

QUESTIONS

1. Analyse Wal's argument and explain why a managed fund investment may be overdiversified. Also explain why one does not necessarily have to have hundreds of thousands of dollars to diversify adequately.
2. Analyse Shane's argument and explain the major error in his logic relative to the use of beta as a substitute for diversification. Explain the key assumption underlying the use of beta as a risk measure.
3. Briefly describe the traditional approach to portfolio management, and relate it to the approaches supported by Wal and Shane.
4. Briefly describe modern portfolio theory (MPT) and relate it to the approaches supported by Wal and Shane. Be sure to mention diversifiable risk, non-diversifiable risk and total risk, along with the role of beta.
5. Explain how the traditional approach and modern portfolio theory can be blended into an approach to portfolio management that might prove useful to the individual investor. Relate this to reconciling Wal's and Shane's differing points of view.

Case Problem 5.2 SUSAN LUSSIER'S INHERITED PORTFOLIO: DOES IT MEET HER NEEDS?

LG3 LG4 LG5 LG6 Susan Lussier is a 35-year-old divorcée currently employed as a tax accountant for a major oil company. She has no children and earns nearly $135 000 a year from her salary. Divorced only a year, Susan has found being single quite exciting. An expert on oil taxation, she is not worried about job security—she is content with her income and finds it adequate to allow her to buy and do whatever she wishes. Her current philosophy is to live each day to its fullest, not concerning herself with retirement, which is too far in the future to require her current attention.

A month ago, Susan's only surviving parent, her father, was killed in a sailing accident. He had retired two years earlier and had spent most of his time sailing. Prior to retirement, he managed a children's clothing manufacturing firm. Upon retirement he sold his shares in the firm and invested the proceeds in a security portfolio that provided

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

him with supplemental retirement income of over $30 000 per year. In his will, he left his entire estate to Susan. The estate was structured in such a way that in addition to a few family heirlooms, Susan received a security portfolio with a market value of nearly $350 000 and about $10 000 in cash.

Susan's father's portfolio contained 10 securities: five bonds, two company shares and three managed funds. The accompanying table lists the securities and their key characteristics. The shares were issued by large, mature, well-known companies that had exhibited continuing patterns of dividend payment over the past five years. The shares offered only moderate growth potential—probably no more than 2% to 3% appreciation per year. The managed funds in the portfolio were income funds invested in diversified portfolios of income-oriented shares and bonds. They provided stable streams of dividend income but offered little opportunity for capital appreciation.

TABLE The Securities Portfolio that Susan Lussier Inherited

Bonds

Par Value	Issue	S&P Rating	Interest Income	Quoted Price	Total Cost	Current Yield
$40 000	Delta Power 10.125% due 2029	AA	$4050	98.000	$39 200	10.33%
30 000	Mountain Water Group 9.750% due 2021	A	2925	102.000	30 600	9.56
50 000	Cadet Gas 9.500% due 2016	AAA	4750	97.000	48 500	9.79
20 000	Trans-Pacific Gas 10.000% due 2027	AAA	2000	99.000	19 800	10.10
20 000	Tele Services 9.875% due 2017	AA	1975	100.000	20 000	9.88

Shares

Number of Shares	Company	Dividend per Share	Dividend Income	Price per Share	Total Cost	Beta	Dividend Yield
2000	International Supply Ltd	$2.40	$4800	$22	$44 900	0.97	10.91%
3000	Black Motors Ltd	1.50	4500	17	52 000	0.85	8.82

Managed Funds

Number of Shares	Fund	Dividend per Share Income	Dividend Income	Price per Share	Total Cost	Beta	Dividend Yield
2000	International Capital Income A Fund	$0.80	$1600	$10	$20 000	1.02	8.00%
1000	Grimner Special Income Fund	2.00	2000	15	15 000	1.10	7.50
4000	Ellis Diversified Income Fund	1.20	4800	12	48 000	0.90	10.00
		Total annual income:	$33 400	Portfolio value:	$338 000	Portfolio current yield:	9.88%

Now that Susan owns the portfolio, she wishes to determine whether it is suitable for her situation. She realises that the high level of income provided by the portfolio will be taxed at a rate of about 40%. Because she does not currently need it, Susan plans to invest the after-tax income primarily in shares offering high capital gain potential. During the coming years she clearly needs to avoid generating taxable income. (Susan is already paying out a sizeable portion of her current income in taxes.) She feels fortunate to have received the portfolio and wants to make certain it provides her with the maximum benefits, given her financial situation. The $10 000 cash left to her will be especially useful in paying brokers' commissions associated with making portfolio adjustments.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

QUESTIONS

1. Briefly assess Susan's financial situation and develop a portfolio objective for her that is consistent with her needs.
2. Evaluate the portfolio left to Susan by her father. Assess its apparent objective and evaluate how well it may be doing in fulfilling this objective. Use the total cost values to describe the asset allocation scheme reflected in the portfolio. Comment on the risk, return and tax implications of this portfolio.
3. If Susan decided to invest in a security portfolio consistent with her needs—indicated in response to question **1**—describe the nature and mix, if any, of securities you would recommend that she purchase. Discuss the risk, return and tax implications of such a portfolio.
4. Compare the nature of the security portfolio inherited by Susan, from the response to question **2**, with what you believe would be an appropriate security portfolio for her, from the response to question **3**.
5. What recommendations would you give Susan about the inherited portfolio? Explain the steps she should take to adjust the portfolio to her needs.

Excel with Spreadsheets

Lance is looking at an investment portfolio of two shares, Amcor (AMC) and Brambles (BXB), since they have local and international operations. He uses the capital asset pricing model to define the required returns for the two companies (refer to Equations 5.3 and 5.3a):

$$r_j = R_F + [\beta_j \times (r_m - R_F)]$$

Lance measures R_F using the current Treasury note return of 3% and measures r_m using the average return on the ASX 200 of 7%. He researches a source for the beta information for AMC and BXB from Yahoo!7 Finance.

Questions

1. What are the beta values for AMC and BXB? Assume that the beta for the ASX 200 Index is 1.0. Using the CAPM, create a spreadsheet to determine the required rates of return for both AMC and BXB.
2. Lance has decided that the portfolio will be distributed between AMC and BXB in a 60% and 40% split, respectively. Hence, a weighted average can be calculated for both the returns and betas of the portfolio. This concept is shown in the spreadsheet for Table 5.2, which can be viewed at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885. **Create a spreadsheet** using the following models for the calculations:

$$war = w_i * r_i + w_j * r_j$$

where:

war = weighted average required rate of return for the portfolio
w_i = weight of security i in the portfolio
r_i = required return of security i in the portfolio
w_j = weight of security j in the portfolio
r_j = required return of security j in the portfolio

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

$$wab = w_i * \beta_i + w_j * \beta_j$$

where:

wab = weighted average beta for the portfolio
w_i = weight of security i in the portfolio
β_i = beta for security i
w_j = weight of security j in the portfolio
βj = beta for security j

Portfolio construction and portfolio management impact most Australians through their superannuation investments. Getting a portfolio of securities to perform well is a significant challenge to both professionals and amateurs alike. The Web is a valuable source of information for portfolio data and guidance on portfolio approaches. The following websites offer information about most of the elements required to develop portfolios.

WEBSITE	URL
ASX	www.asx.com.au
Cannex	www.canstar.com.au
Dixon Advisory	www.dixon.com.au
Lincoln Indicators	www.lincolnindicators.com.au
Morningstar	www.morningstar.com.au
Smart Investor	www.afrsmartinvestor.com.au
Perpetual	www.perpetualtruths.com.au
Vanguard Investments	www.vanguard.com.au
Yahoo!7 Finance	http://au.finance.yahoo.com

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CFA EXAM QUESTIONS

Being certified as a Chartered Financial Analyst (CFA) is globally recognised as the highest professional designation you can receive in the field of professional money management. In Australia it is highly regarded by professionals working in the finance sector. The CFA charter is awarded to those candidates who successfully pass a series of three levels of exams, with each exam lasting six hours and covering a full range of investment topics. The CFA program is administered by the CFA Institute in Charlottesville, VA (for more information about the CFA program, go to <www.cfainstitute.org>).

Starting with this Part (Two) of the text, and at the end of each part hereafter, you will find a small sample of CFA questions taken from the Level I curriculum as well as *CFA Candidates Study Notes, Level 1, Volume 4* (Cengage Learning).

THE INVESTMENT ENVIRONMENT AND CONCEPTUAL TOOLS

Following is a sample of 11 Level-I CFA exam questions that deal with many of the topics covered in Parts One and Two of this text, including the time value of money, measures of risk and return, securities markets and portfolio management. (When answering the questions, give yourself 1½ minutes for each question; the objective is to correctly answer 8 of the 11 questions in a period of 16½ minutes.)

1. An investor bought a share for $50 a month ago and it is currently selling for $45. An order to sell the share if it drops to $40 is a:
   a. short sale order
   b. stop loss order
   c. stop buy order

2. What is the leveraged return of 500 shares of a shares purchased with 40% margin at $15/share that rises to $20/share?
   a. 55.56%
   b. 33.33%
   c. 66.67%

3. The adjustment for a shares split in the Standard & Poor's 500 is accomplished:
   a. automatically through the market value calculation.
   b. by deflating the numerator
   c. by the adjusted divisor

4. An investment of $150,000 is expected to generate an after-tax cash flow of $100,000 in one year and another $120,000 in two years. The cost of capital is 10 percent. What is the internal rate of return?
   a. 28.39 percent
   b. 28.59 percent
   c. 28.79 percent

5. An analyst expects that a company's net sales will double and the company's net income will triple over the next five-year period starting now. Based on the analyst's expectations, which of the following *best* describes the expected compound annual growth?
   a. Net sales will grow 15% annually and net income will grow 25% annually.
   b. Net sales will grow 20% annually and net income will grow 40% annually.
   c. Net sales will grow 25% annually and net income will grow 50% annually.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

6. A shares has the following potential returns and the associated probabilities that each will occur.

Possible return	Probability of occurrence
3%	25%
10%	50%
25%	12.5%
40%	12.5%

What is the expected return on this shares?
   a. 13.88%
   b. 19.50%
   c. 42.50%

7. A portfolio that is on the capital market line but to the left of the market portfolio (M) has the following characteristic:
   a. a lending portfolio
   b. a borrowing portfolio
   c. higher unsystematic risk than the market portfolio

8. In the Markowitz model, portfolio risk:
   a. is equal to the simple sum of the standard deviations of each of the securities in the portfolio
   b. is equal to the product of the standard deviations of each of the securities in the portfolio
   c. is different from the simple weighted average of the risks of the individual securities in the portfolio

9. Risk that can be diversified away is described as:
   a. unsystematic risk
   b. market risk
   c. systematic risk

10. iCorporation has a relative systematic risk level that is 40% greater than the overall market. The expected return on the market is 16%, and the risk-free rate is 7%. Using the CAPM, the required rate of return for iCorporation is *closest* to:
   a. 16.0%
   b. 19.6%
   c. 22.4%

11. If a shares's market-implied expected return exceeds the capital asset pricing model—predicted required (expected) return, the shares plots on the security market line (SML) as follows:
   a. above the SML and is underpriced
   b. below the SML and is overpriced
   c. above the SML and is overpriced

(*Source:* From Professional Exam Review. *CFA Candidate Study Notes, Level 1,* Volume 4, 2e. © 2009 Delmar Learning, a part of Cengage Learning, Inc. Reproduced by permission. <www.cengage.com/permissions>.)

Answers: 1. b; 2. a; 3. a; 4. c; 5. a; 6. a; 7. a; 8. c; 9. a; 10. b; 11.a.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

PART THREE

Investing in Shares

6 Shares

7 Analysing Shares

8 Share Valuation

9 Technical Analysis, Market Efficiency and Behavioural Finance

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER 6

Shares

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Explain the investment appeal of ordinary shares and why individuals like to invest in them.
- LG2 Describe share returns from a historical perspective and understand how current returns measure up to historical standards of performance.
- LG3 Discuss the basic features of ordinary shares, including issue characteristics, quotations and transaction costs.
- LG4 Understand the different kinds of share values.
- LG5 Discuss share dividends, types of dividends and dividend reinvestment plans.
- LG6 Describe various types of shares, including foreign shares, and note how shares can be used as investment vehicles.

The World's Best Sharemarket

Which country's sharemarket has been the best performer in the world, not just over the past six months or year or even 10 years, but over the last century? One stands above all others in its combination of higher returns and lower volatility. Believe it or not, it's Australia!

In the period 1900 to 2009, Australia had the best-performing sharemarket of 19 countries studied. According to Credit Suisse, Australia posted 7.5% real (after inflation) returns per year during that time, with a standard deviation of 18.2%. In comparison, US shares made a 6.2% real return, with a standard deviation of 20.4%.

So what was the secret of Australia's success? A common factor among the best-performing equity markets over the last 110 years is that they tended to be resource-rich and/or new world countries.

Australia has both, that's for sure. It has tonnes of coal, iron ore, uranium, zinc, nickel and gold. It produces oil and natural gas, but oil imports are growing. It also grows wheat and other grains. And its economy is underpinned by a sound banking system.

This chapter looks at ordinary shares, and introduces some of the key concepts and principles of investing in these complex but potentially rewarding securities.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What Shares Have to Offer

LG1 LG2

Ordinary shares enable investors to participate in the profits of a company. Every shareholder is a part owner of the company and, as such, has a claim on the wealth created by it. This claim is not without limitations, however, because ordinary shareholders are really the **residual owners** of the company. That is, their claim is subordinate to the claims of other investors, such as lenders, so for shareholders to get rich, the company must first meet all its other financial obligations. Accordingly, *as residual owners, holders of ordinary shares have no guarantee that they will receive any return on their investment*.

residual owners
owners/shareholders of a company who are entitled to dividend income and a prorated share of the company's earnings only after all the company's other obligations have been met.

The Appeal of Shares

Shares are a popular investment choice among both individual and institutional investors. For most investors, the allure of ordinary shares is the prospect that they will increase in value over time and generate significant capital gains. Many shares do pay dividends, thereby providing investors with a periodic income stream. For most shares, however, the dividends paid in any particular year pale in comparison to the capital gains (and capital losses) that are the natural consequence of share price fluctuations.

Putting Share Price Behaviour in Perspective

Given the nature of ordinary shares, when the market is strong, investors can generally expect to benefit from steady price appreciation. A good example is the performance that took place in 2006/07, when the market (measured by the S&P ASX 200) went up by more than 23%.

Unfortunately, when markets falter, so do investor returns. Just look at what happened in January 2008, when the ASX 200 fell by 22%. On one day alone, 22 January 2008, the market suffered its biggest one-day drop since October 1997, falling by over 7%.

However, even though such bad days occur, and may persist for weeks or months, they *are the exception rather than the rule*. Over time, the market offers attractive returns. Even though the global financial crisis of 2008–2010 is one of the worst setbacks to equity investments for nearly a century, by August 2010 the market had already recovered above the level of September 2008.

INVESTOR FACTS

SO, WHAT'S IN A BEAR?—We all know that a bear market occurs when share prices are falling. But not all falling markets end up as bears. A drop of 5% or more in the share price index is called a routine decline. As the name indicates, a routine decline typically occurs several times a year, such as in May 2010, when the ASX 200 fell by almost 8%. A correction is a drop of 10% or more; a recent one occurred in October 2008 when the index declined by nearly 13%. Finally, there's a bear market—a term reserved for severe market declines of *20% or more*. While the 1990s were bear-free, there have been several severe declines in the 2000s; for example, January 2008 saw a decline of 22%.

From Share Prices to Share Returns

Our discussion so far has centred on *share prices*, but what is even more important to investors is *share returns*, which take into account not only price behaviour but also dividend income. Table 6.1 uses the ASX Accumulation Index to show annual market returns over the 28-year period from 1983 to 2010. In addition to total returns, market performance is broken down into the two basic sources of return: dividends and capital gains. These figures, of course, reflect the *general behaviour of the market as a whole*, not necessarily that of *individual* shares. Think of them as the return behaviour on a well-balanced portfolio of ordinary shares.

The numbers show a market that, over that 28-year period, provided annual returns ranging from a low of –20.1% (in 2009) to a high of +52.2% (in 1986). Breaking down the returns into dividends and capital gains reveals

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 6.1 Annual Returns in the Sharemarket, 1983–2010

Year	Rate of Return from Dividends (%)	Rate of Return from Capital Gains (%)	Total Rate of Return (%)
1983	3.8	63.0	66.8
1984	4.9	–7.2	–2.3
1985	4.3	39.8	44.1
1986	3.4	48.8	52.2
1987	4.7	–12.5	–7.8
1988	5.1	12.8	17.9
1989	5.7	11.7	17.4
1990	6.8	–24.3	–17.5
1991	3.8	30.4	34.2
1992	3.8	–6.1	–2.3
1993	3.0	42.4	45.4
1994	4.0	–12.7	–8.7
1995	4.0	16.2	20.2
1996	3.6	11.0	14.6
1997	3.9	8.3	12.2
1998	3.5	8.1	11.6
1999	3.2	12.9	16.1
2000	3.4	1.8	5.2
2001	3.2	7.2	10.4
2002	3.5	–8.2	–4.7
2003	4.2	–5.9	–1.7
2004	3.7	17.9	21.6
2005	3.9	22.5	26.4
2006	3.7	20.2	23.9
2007	3.5	25.2	28.7
2008	4.3	–17.7	–13.4
2009	5.3	–25.4	–20.1
2010	4.2	8.9	13.1
Annual Average	4.1	10.3	14.4

(*Source:* Derived from Reserve Bank of Australia, *Bulletin*, various issues. Copyright © Reserve Bank of Australia, 2001–2010. All rights reserved.)

that the big returns (or losses) came from capital gains. Overall, *shares provided average annual returns of 14.4% over the 28-year period*. Historically, this was a period of volatile and relatively high share returns. Similar figures for the United States show a 10.8% average return over the past 60 years, with an average of around –3.6% since 2000.

Keep in mind that the numbers represent market performance; individual shares can and often do perform quite differently. At least, the averages give us a benchmark against which we can assess current share returns and our own expectations. For example, if a return of 10–12% can be considered a good long-term estimate for shares, then sustained returns of 17–18% should definitely be viewed as extraordinary. Likewise, long-run share returns of only 6–8% should be viewed as substandard performance. If that's the best you think you can do, then you probably should stick with bonds or debentures, where you'll earn almost as much with much less risk.

The Pros and Cons of Share Ownership

Investors own shares for all sorts of reasons: the potential for capital gains, for their current income, or perhaps the high degree of market liquidity. But as with any investment vehicle, there are pros and cons to these securities.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Advantages of Share Ownership One reason that shares are so appealing is the substantial return opportunities they offer. As we just saw, shares generally provide attractive, highly competitive returns over the long haul. Indeed, ordinary share returns compare very favourably to other investment outlets such as long-term corporate bonds and Treasury bonds. For example, even though the ASX All Ordinaries Index fell by 29% during 2008/09 and Australian bonds returned 12.7% during the same period, a longer-term perspective tells a different story. In the 10 years to 2010, the total return on share investments in Australia (using the ASX Accumulation Index, which includes the value of dividends) was 8.6%, compared to an average return across an index of bonds of 6.2%. And over a 20-year period, the ranking of returns is maintained: 9.7% return on shares, compared to 8.9% for bonds. Although long-term bonds outperform shares in some years, the opposite is true far more often than not. Shares typically outperform bonds, and usually by a wide margin. Shares also provide investors with protection from inflation because over time their returns exceed the inflation rate. In other words, by purchasing shares, investors gradually increase their purchasing power over time.

Shares offer other benefits as well: they are easy to buy and sell, and the transaction costs are modest. Moreover, price and market information is widely disseminated in the news and financial media. A final advantage is that the unit cost of a share is usually within the reach of most individual investors. Unlike bonds, which normally carry minimum denominations of at least $1000, and some managed funds that have fairly hefty minimum investments, ordinary shares don't have such minimums. Instead, most shares today are priced at less than $50 a share—and any number of shares, no matter how few, can be bought or sold.

The Disadvantages There are also some disadvantages to share ownership. Risk is perhaps the most significant. Shares are subject to various types of risk, including business and financial risk, purchasing power risk, market risk and event risk. All of these can adversely affect a share's earnings and dividends, its price appreciation and, of course, the rate of return earned by an investor. Even the best of shares possess elements of risk that are difficult to overcome, because company earnings are subject to many factors, including government control and regulation, foreign competition and the state of the economy. Because such factors affect sales and profits, they also affect the price behaviour of the share and possibly even dividends.

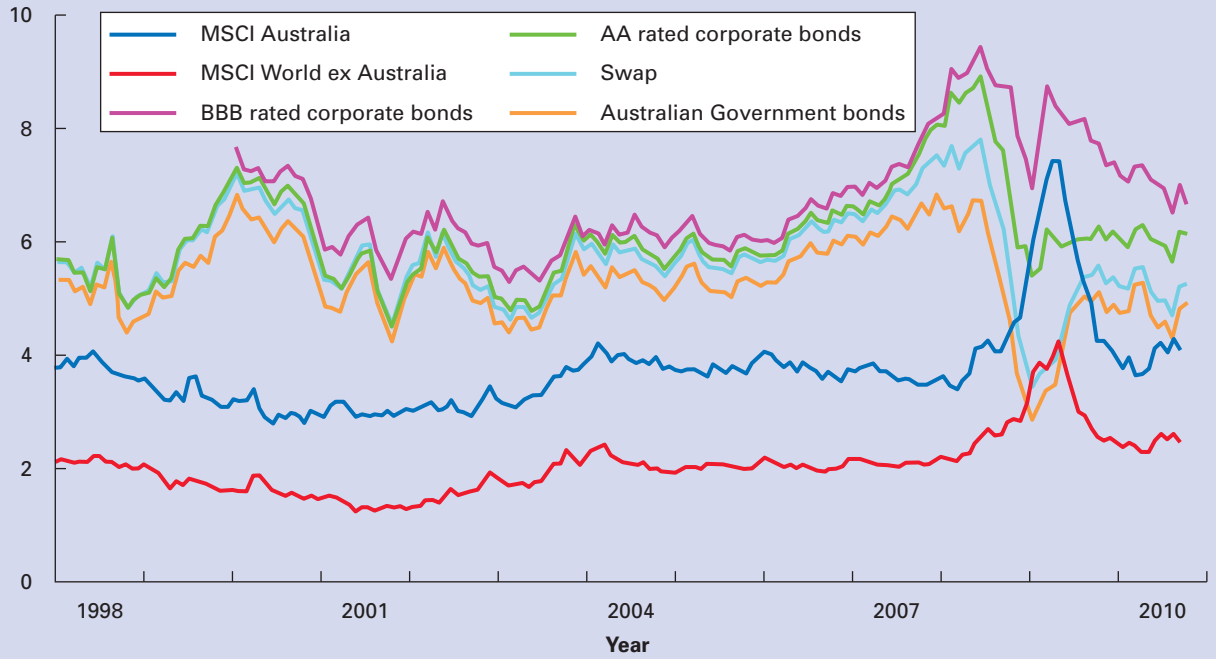
All of this leads to another disadvantage: the earnings and general performance of shares are subject to wide swings, so it is difficult to value ordinary shares and consistently select top performers. The selection process is complex because so many elements go into formulating expectations of share performance. In other words, not only is the future outcome of the company and its shares uncertain, but the evaluation and selection process itself is also far from perfect.

A final disadvantage of shares is the sacrifice in current income. Several types of investments—bonds, for instance—pay higher levels of current income and do so with much greater certainty. Figure 6.1 compares the dividend yield on shares with the coupon yield on high-grade corporate bonds. It shows the degree of sacrifice that equity investors make in terms of current income. Clearly, shares still have a long way to go before they catch up with the *current income levels* available from bonds and most other types of fixed-income securities.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 6.1 **The Current Income of Shares and Bonds**

Clearly, the current income (dividends) paid to shareholders falls far short of the amount of income paid to bondholders.



(*Source:* RBA charts based on information from the Michigan Consumer Statement Index (MSCI); Thomson Reuters; Bloomberg; UBS AG (Australia); Reserve Bank of Australia, <www.rba.gov.au/chart-pack/share-markets.pdf> and <www.rba.gov.au/chart-pack/interest-rates-australia.pdf>.)

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

6.1 What is a *share*? What is meant by the statement that shareholders are the *residual owners* of the company?

6.2 What are two or three of the major investment attributes of shares?

6.3 Briefly describe the behaviour of the Australian sharemarket over the last 30 years.

6.4 How important are dividends as a source of return? What about capital gains? Which is more important to total return? Which causes wider swings in total return?

6.5 What are some of the advantages *and* disadvantages of owning shares? What are the major types of risk to which shareholders are exposed?

Basic Characteristics of Ordinary Shares

LG3 LG4

equity capital
evidence of ownership position in a company, in the form of ordinary shares.

Each ordinary share represents an equity (or ownership) position in a company. It's this equity position that explains why shares are often referred to as *equity securities* or **equity capital**. Every share entitles the holder to an equal ownership position and participation in the company's earnings and dividends, an equal vote and an equal voice in management. Together, the ordinary shareholders own the company. The more

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

shares an investor owns, the bigger his or her ownership position. Ordinary shares have no maturity date—they remain outstanding indefinitely.

Shares as a Corporate Security

All companies 'issue' ordinary shares of one type or another. But the shares of many, if not most, companies are never traded, because the companies either are too small or are family controlled. The shares of interest to us in this book are **publicly traded issues**—the shares that are readily available to the general public and that are bought and sold in the open market. The market for publicly traded shares is enormous: the value of all listed Australian shares in 2010 was $1.65 trillion.

publicly traded issues
shares that are readily available to the general public and are bought and sold in the open market.

Ordinary shares can be issued in several different ways. One common procedure today is the **public offering**. In using this procedure, the company, working with an underwriter, offers the investing public a certain number of ordinary shares at a certain price.

public offering
an offering to sell to the investing public a set number of a company's shares at a specified price.

Ordinary shares can also be issued using what is known as a **rights offering**. In a rights offering, existing shareholders are given the first opportunity to buy the new issue. They can purchase new shares in proportion to their current ownership position. For instance, if a shareholder currently owns 1% of a company's ordinary shares and the company issues 10 000 additional shares, the rights offering will give that shareholder the opportunity to purchase 1% (or 100 shares) of the new issue. The net result of a rights offering is the same as that of a public offering: the company ends up with more equity in its capital structure, and the number of shares outstanding increases.

rights offering
an offering of a new issue of shares to existing shareholders who may purchase new shares in proportion to their current ownership position.

In Australia, both public offerings and rights offerings need to be registered with the Australian Securities Exchange and the Australian Securities and Investments Commission, and need to be accompanied by a prospectus. However, a **private placement** of shares to institutional or private investors avoids these costly processes. Shares are offered at a discount to the current market price as an inducement to prospective investors, and to offset the expected fall in share price that typically follows the announcement of a private placement. ASX Listing Rules limit such private placements without shareholder approval to 10% of share capital per annum.

private placement
the direct sale of a new share issue (or other security issue) to an investor or group of investors.

Perhaps one of the most creative ways of bringing new issues to the market is through a **stock spin-off**. A spin-off occurs when a company gets rid of one of its subsidiaries or divisions. However, the company does not just sell the subsidiary to some other company; rather, it creates a new stand-alone company and then distributes all the shares in that company, via a spin-off, to its existing shareholders. Normally, companies execute stock spin-offs if they believe the subsidiary is no longer a good fit, or if they feel they have become too diversified and want to focus on their core products. Such spin-offs can work well for investors, too.

stock spin-off
conversion of one of a company's subsidiaries to a stand-alone company by distribution of shares in that new company to existing shareholders.

CSR Limited, for example, successfully spun off its multinational building products business as Rinker Group in March 2003. CSR shareholders received one share in Rinker for every CSR share that they held. The spin-off was initially very successful, with the combined share price of the two companies increasing from $6.45 to $10.79 in just 16 months, a return of approximately 50% per annum. However, the profitability, market share and growth of the fledgling company made it both attractive and vulnerable to being (re)acquired. In 2007 it was successfully taken over by Cemex, a Mexican conglomerate which is now the world's largest cement producer, through Cemex's Australian subsidiary. At the time that the takeover was announced to be successful, Rinker's shares were listed on the ASX at $18.70.

Stock Splits Companies can also increase the number of shares outstanding by executing a **stock split**. In declaring a split, a company merely announces that it will

stock split
a manoeuvre in which a company increases the number of shares outstanding by exchanging a specified number of new shares for each outstanding share.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

increase the number of shares outstanding by exchanging a specified number of new shares for each outstanding share. For example, in a 2-for-1 stock split, two new shares of a security are exchanged for each old share. In a 3-for-2 split, three new shares are exchanged for every two old shares outstanding. Thus, a shareholder who owned 200 shares of a security before a 2-for-1 split becomes the owner of 400 shares; the same investor would hold 300 shares if there had been a 3-for-2 split.

A company uses a stock split when it wants to enhance its share's trading appeal by lowering its market price. Normally, the company gets the desired result: the price of the share tends to fall in close relation to the terms of the split (unless the stock split is accompanied by a big increase in the level of dividends). For example, using the ratio of the number of old shares to new, we can expect a $100 share to trade at or close to $50 a share after a 2-for-1 split. Specifically, we divide the original price per share by the ratio of new shares to old. That same $100 share would trade at about $67 after a 3-for-2 split—that is, $100 ÷ 3/2 = $100 ÷ 1.5 = $67. (Later in this chapter we will discuss a variation of the stock split, known as a stock dividend.)

Share Repurchases Instead of increasing the number of outstanding shares, companies sometimes find it desirable to *reduce* the number of shares by buying back their own shares. Generally speaking, companies repurchase their own shares when they view them as undervalued in the marketplace. When that happens, the company's own shares become an attractive investment candidate. While this has been popular in the United States for many years, it has only been permitted in Australia on an unrestricted basis since 1995. The repurchased shares are cancelled.

Share repurchases can be made in two ways. First, *on-market offers* occur within the normal rules of buying and selling on the ASX, but with the restriction that the price must not be more than 5% above the average price of the previous five days. Sellers in an on-market offer are subject to capital gains tax.

Second, a share repurchase can be made *off-market*. These are not within ASX trading rules, and can be made to any group of shareholders at any price. For tax purposes, an off-market offer is treated as part return of capital and part dividend, with various combinations of capital gains and losses, as well as franking credits, accruing to the seller.

Why might companies repurchase their own shares? One reason is that managers may view the shares as undervalued in the marketplace, and therefore hope to increase the price by reducing the supply. Another advantage is that share repurchases can be used to buy out particular shareholders. For some companies with few good investment opportunities, it is a convenient way to return capital to shareholders.

INVESTOR FACTS

SHARE BUY-BACKS—Research shows that a company's share price increases when a share buy-back is announced. However, it also shows that share buy-backs are more common with companies that have large numbers of executive and employee options outstanding and exercisable. The share price increase for such companies is lower than would be expected, showing that the market takes into account the likely future effects of more options being exercisable.

Classified Shares For the most part, all the shareholders in a company enjoy the same benefits of ownership. Occasionally, however, a company will *issue different classes of share*, each of which entitles holders to different privileges and benefits. These issues are known as **classified shares**. Hundreds of publicly traded companies have created such share classes. Although issued by the same company, each class of shares is different and has its own value.

classified shares shares issued by a company in different classes, each of which offers different privileges and benefits to its holders.

Classified shares are customarily used to denote either different voting rights or different dividend obligations. For instance, class A could designate non-voting shares while class B carried normal voting rights. Alternatively, the class A shares would receive no dividends while class B would receive regular cash dividends.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Regardless of the specifics, whenever there is more than one class of shares outstanding, investors should take the time to determine the privileges, benefits and limitations of each class.

Buying and Selling Shares

Whether buying or selling shares, you should become familiar with how they are quoted and with the costs of executing share transactions. Certainly, keeping track of *current prices* is an essential element in the buy-and-sell decisions of investors. Prices also help investors to monitor the market performance of their security holdings. Similarly, *transaction costs* are important because of the impact they can have on investment returns. Indeed, the costs of executing share transactions can sometimes consume most (or all) of the profits from an investment. These costs should not be taken lightly.

Reading the Quotes Investors in the sharemarket have come to rely on a highly efficient information system that quickly disseminates market prices to the public. The share quotes that appear daily in the financial press are a vital part of that information system. To see how price quotations work and what they mean, consider the quotes that appear daily (Monday to Friday) in the financial press, for example, the *Australian Financial Review* or the *Sydney Morning Herald*. As we will see, these quotes give not only the most recent price of each share, but also a great deal of additional information.

Some ASX share quotes are presented in Figure 6.2 These quotes were published in the *Sydney Morning Herald* on Wednesday 8 September 2010. They describe the trading activity that occurred the day before, which in this case was Tuesday 7 September 2010. Other information is also conveyed in this share quote:

- The company's name (e.g. Stockland).
- 'Last Sale' contains the last (closing) price at which the share sold on the day in question ($4.10).
- '+ or –' (net change) shows that Stockland closed down 5.0 cents per share on Tuesday 7 September.
- The daily volume follows: the sales numbers are listed in lots of 100 shares, so the figure 71 545 means that 7 154 500 shares of Stockland were traded on 7 September.
- 'Dividend Yield' and 'P/E Ratio' are reported next: the dividend yield was 5.32% and the price/earnings ratio was 20.4.
- '52 week high and low' shows the highest and lowest prices at which the share sold during the past 52 weeks; note that Stockland traded between $3.52 and $4.23 on Tuesday 7 September.

Transaction Costs An investor incurs certain transaction costs when buying or selling shares. The main cost is the brokerage fee paid—by both buyer and seller—at the time of the transaction. Brokerage rates on share transactions were deregulated in Australia in 1987; as a result, the rates are sometimes negotiable. At the time of writing, brokerage fees may involve a minimum amount (for example, $30 for transactions under $5000), or may be based on a percentage of the transaction value. Percentage fees range

INVESTOR FACTS

INSTALMENT WARRANTS—These allow investors the best of both worlds: investing in shares, with the immediate benefits of dividend income and franking credits, while conserving their cash. Shares are purchased in two payments: around 50% at the time of purchase, and the balance later. If the share price falls, any loss is limited to the amount of the first instalment. When the second payment falls due, they can make the payment and receive the fully paid shares, or defer for another 12–18 months by rolling into the next series of instalments. Because the second payment is not compulsory, instalments are an eligible investment for self-managed superannuation funds. Instalment warrants are listed and traded on the Australian Securities Exchange.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 6.2 **Share Quotations**

Shown in this figure are the quotations for a small number of shares traded on the ASX. These quotes provide a summary of the transactions that occurred on one day.

Company	Last sale	+ or –	No. sold 100s	Div yld %	P/E ratio	52 week high	52 week low
Sterihealth	2.10		-	3.33f	7.7	2.18	1.25
Sterling Bio	.05		-	-		.10	.025
Sthn X Elec	1.04	-3	40	6.25f	14.6	1.74	1.00
Sthn X Media	1.995		8321	4.86f	32.3	2.31	1.227
Stirling	.009	-1	5563	-		.018	.006
Stockland	4.10	-5	71545	5.32	20.4	4.23	3.52
Stokes	.20		-	-	2.0	.26	.076
Strat Pool	.09	-5	23	-	30.0	.17	.08
Stratatel	.034		30848	9.71	11.3	.088	.033
Strathfld	.005		-	-	.9	.023	.005
Struct Mon	.01		-	-		.054	.005

Company name

Closing (final) price for the day

Net change in price from the previous day

Share volume, in hundreds

Highest and lowest prices for previous 52 weeks

Price-earnings ratio: Market price/EPS

Dividend yield (dividends as percentage of share price)

(*Source: Sydney Morning Herald*, Business Day section, 8 September 2010.)

INVESTOR FACTS

MARKET MUSCLE—The total market value of a company—defined as the share price multiplied by the number of shares outstanding—is a measure of what investors think a company is worth. For many years, BHP was known as the 'Big Australian' due to its position at the top of the market capitalisation list. This position has changed hands on a number of occasions in more recent times, with other Australian companies such as National Australia Bank, News Corporation, Rio Tinto Limited, Telstra and AMP sharing the top positions for a time.

from 0.1% to 0.5%, depending on the value of the transaction, the method of transacting and the frequency of trades. Minimum dollar charges usually apply.

Share Values

The worth of a share can be described in a number of ways. Terms such as *par value*, *book value*, *market value* and *investment value* are all found in the financial media. Each designates some accounting, investment or monetary attribute of a share.

Par Value The term **par value** refers to the stated, or face, value of a share. Except for accounting purposes, it is relatively useless. In many ways, par value is a throwback to the early days of corporate law, when it was used as a basis for assessing the extent of a shareholder's legal liability. Since the introduction of the *Company Law Review Act* in July 1998, companies no longer need to state a par value for shares.

Book Value **Book value**, another accounting measure, represents the amount of shareholders' equity in the company. As we will see in the next chapter, it is commonly used in share valuation. Book value indicates the amount of shareholder funds used to finance the company. It is calculated by subtracting the company's liabilities and preference shares from its assets. For example, assume that a corporation has $10 million in assets, owes $5 million in various forms of short- and long-term debt and has $1 million worth of preference shares outstanding. The book value of this company would be $4 million.

Book value can be converted to a per-share basis—*book value per share*—by dividing it by the number of common shares outstanding. For example, if the company just described has 100 000 shares of ordinary shares outstanding, then its book value

par value
the stated, or face, value of a share.

book value
the amount of shareholders' equity in a company; equals the amount of the company's assets minus the company's liabilities and preference shares.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

per share is $40. As a rule, most shares have market prices that are above their book values.

market value
the prevailing market price of a security.

Market Value **Market value** is one of the easiest share values to determine. It is simply *the prevailing market price of an issue*. In essence, market value indicates how the market participants as a whole have assessed the worth of a share.

By multiplying the market price of the share by the number of shares outstanding, we can also find the market value of the company itself—or what is known as the company's *market capitalisation*. For example, if a company has 1 million shares outstanding and its share trades at $50, the company has a market value (or 'market cap') of $50 million. For obvious reasons, the market value of a share is generally of considerable importance to shareholders.

investment value
the amount that investors believe a security should be trading for, or what they think it's worth.

Investment Value **Investment value** is probably the most important measure for a shareholder. It indicates the worth investors place on the share—in effect, what they think the share *should* be trading for. Determining a security's investment value is a complex process based on expectations of the return and risk characteristics of a share. Any share has two potential sources of return: annual dividend payments and the capital gains that arise from appreciation in market price. In establishing investment value, investors try to determine how much money they will make from these two sources. They then use those estimates as the basis for formulating the return potential of the share. At the same time, they try to assess the amount of risk to which they will be exposed by holding the share. Such return and risk information helps them place an investment value on the share. This value represents the *maximum* price an investor should be willing to pay for the issue. Investment value is the major topic in Chapter 8.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

6.6 What is a *stock split*? How does a stock split affect the market value of a share? Do you think it would make any difference (in price behaviour) if the company also changed the dividend rate on the share? Explain.

6.7 What is a *stock spin-off*? In very general terms, explain how a stock spin-off works. Are these spin-offs of any value to investors? Explain.

6.8 Define and differentiate between the following pairs of terms.

a. *On-market* versus *off-market* share repurchases
b. *Par value* versus *market value*
c. *Book value* versus *investment value*

Dividends

LG 5

Traditionally, investors have put very little value on dividends. In Australia, however, since the introduction of dividend imputation, investors have been keen to receive franked dividends, and many companies have increased their payout ratios to meet this demand.

Let's take a closer look at this important source of investor income and examine several procedural aspects of the corporate dividend decision.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Dividend Decision

By paying out dividends, companies share with their shareholders some of the profits they have earned. Actually, the question of how much to pay in dividends is decided by a company's board of directors. The directors evaluate the company's operating results and financial condition to determine whether dividends should be paid and, if so, in what amount. If the directors decide to pay dividends, they also establish several important payment dates. In this section we will look at the corporate and market factors that go into the dividend decision. Then we will briefly explain some of the payment dates.

Corporate versus Market Factors When the board of directors assembles for its regular dividend meeting, it weighs a variety of factors in making a decision to pay out dividends. First, the board looks at the company's earnings. For even though a company does not have to show a profit to pay dividends, profits are still considered a vital link in the dividend decision. With ordinary shares, the annual earnings of a company are usually measured and reported in terms of **earnings per share (EPS)**. EPS translates total corporate profits into profits on a per-share basis. It provides a convenient measure of the amount of earnings available to shareholders. Earnings per share is found by using the following simple formula:

earnings per share (EPS) the amount of annual earnings available to ordinary shareholders, as stated on a per-share basis.

Equation 6.1

$$\text{EPS} = \frac{\text{Net profit after taxes} - \text{Preference dividends}}{\text{Number of ordinary shares outstanding}}$$

For example, if a company reports a net profit of $1.25 million, pays $250 000 in preference dividends and has 500 000 ordinary shares outstanding, it has an EPS of $2—that is, ($1 250 000 – $250 000) ÷ 500 000. Note in Equation 6.1 that preference dividends are subtracted from profits, since they must be paid before any monies can be made available to ordinary shareholders.

While assessing profits, the board also looks at the company's growth prospects. It is very likely that some of the company's present earnings will be needed for investment purposes and to help finance expected growth. The board also considers how much cash the company has. Finally, the board wants to ensure that it is meeting all legal and contractual constraints. For example, the company may be subject to a loan agreement that legally limits the amount of dividends it can pay.

After looking at internal matters, the board considers certain market effects and responses. One very important aim for Australian companies with franking credits is to pay the maximum available franked dividends so that shareholders can gain the maximum taxation benefit. A constraint on this is the company's need for cash flows for growth. Regardless of whether dividends are franked or not, most investors feel that if a company is going to retain earnings rather than pay them out in dividends, it should exhibit proportionately higher growth and profit levels. The market's message is clear: if the company is investing the money wisely and at a high rate of return, fine; otherwise, pay a larger portion of earnings out in the form of dividends. Moreover, to the extent that different types of investors tend to be attracted to different types of companies, the board must make every effort to meet the dividend expectations of its shareholders. For example, income-oriented investors are attracted to companies that generally pay high dividends. Failure to meet those

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

expectations can lead to disastrous results—a sell-off of the company's shares—in the marketplace.

Some Important Dates Let's assume the directors decide to declare a dividend. They then must indicate the date of payment and other important dates associated with the dividend. Normally, the directors issue a statement to the press indicating their dividend decision, along with the pertinent dividend payment dates. These statements are widely quoted in the financial media. Typical of such releases are the dividend news captions depicted in Figure 6.3.

date of record (or books close date)
the date on which an investor must be a registered shareholder of a company to be entitled to receive a dividend.

Three dates are particularly important to the shareholder: date of record, ex-dividend date and payment date. The **date of record**, or **'books close date'**, is the

FIGURE 6.3 Important Dates and Data about Dividends

AFR Smart Investor - ASX DIVIDENDS DECLARED

Report at 08:30 Wednesday 01/09/2010. Processed 15:26 Wednesday 1/9/2010.

KEY: [1] **Reporting Period;** [2] **Dividend per share;** [3] **Estimated Trust Distribution;** [4] **Dividend Reinvestment Plan;** [5] **Bonus Share Plan.**

DRP: 2 - Retail shareholder DRP only; 3 - Full DRP offering; 4 - DRP suspended; 5 - DRP subject to shareholder approval.

BSP: 2 - Retail shareholder BSP only; 3 - Full BSP offering; 4 - BSP suspended.

Issuer Name	Security Description	ASX Code	IFQ[1]	Div[2]	ETD[3]	YTD Div	Frank%	DRP[4]	BSP[5]	PY Interim	PY Final	Ex Date	Books Close	Payable
1300 Smiles Ltd	ordinary	ONT	F	7.2	-	13.7	100	-	-	-	6	1/10/10	8/10/10	14/10/10
AP Eagers Ltd	ordinary	APE	I	23	-	23	100	4	-	22	-	9/9/10	15/9/10	30/9/10
Adelaide Brighton	ordinary	ABC	I	10	-	10	100	4	-	5.5	-	25/8/10	31/8/10	11/10/10
Adtrans Grp	ordinary	ADG	F	15	-	23	100	4	-	-	12	8/9/10	14/9/10	8/10/10
Aevum Ltd	ordinary	AVE	F	3	-	5	-	4	-	2	2	30/9/10	7/10/10	21/10/10
AGL Energy Ltd	ordinary	AGK	F	30	-	59	-	3	-	-	28	6/9/10	10/9/10	30/9/10
Agricultural Land	ordinary units	AGJ	F	0.92	-	2.02	-	3	-	-	1.027	24/6/10	30/6/10	27/9/10
Air New Zealand	ordinary	AIZ	F	-	-	2.3229	-	3	-	2.3685	2.8747	6/9/10	10/9/10	21/9/10
Alumina Ltd	ordinary	AWC	I	2.2324	-	2.2324	100	4	-	-	-	13/8/10	19/8/10	6/9/10
Amalg Hldgs	ordinary	AHD	F	23	-	37	100	4	-	-	21	27/8/10	2/9/10	16/9/10
Amcom Telecomm	ordinary	AMM	F	1	-	1.4	100	-	-	-	0.5	18/10/10	22/10/10	10/11/10
Amcor Ltd	ordinary	AMC	F	17	-	29.5	-	3	-	-	17	2/9/10	8/9/10	1/10/10
Ammtec Ltd	ordinary	AEC	F	11	-	17.5	100	3	-	-	10	11/10/10	15/10/10	29/10/10
AMP Ltd	ordinary	AMP	I	15	-	15	60	3	-	14	-	6/9/10	10/9/10	15/10/10
Anglogold Ashanti	cdi 5:1	AGG	I	2.0818	-	2.0818	-	-	-	1.8188	-	30/8/10	3/9/10	10/9/10
Ansell Ltd	ordinary	ANN	F	17.5	-	30.5	-	-	-	-	16	31/8/10	6/9/10	29/9/10
ANZ Banking Grp	pref share	ANZPA	Q1	141.3	-	141.3	100	-	-	121.09	132.86	25/8/10	31/8/10	15/9/10
ANZ Banking Grp	pref share	ANZPB	Q1	130.71	-	130.71	100	-	-	322.69	122.27	25/8/10	31/8/10	15/9/10
APA Grp	stapled securities	APA	F	17	-	32.75	-	3	-	-	16	24/6/10	30/6/10	15/9/10
APN News & Media	ordinary	APN	I	5	-	5	-	3	-	-	12	1/9/10	7/9/10	28/9/10
Aquarius Platinum	ordinary	AQP	F	-	-	2.2683	-	-	-	-	-	6/9/10	10/9/10	1/10/10
ARB Corp	ordinary	ARP	F	12	-	19.5	100	4	4	40	-	1/10/10	8/10/10	22/10/10
Ariadne Aust	ordinary	ARA	F	1.5	-	1.5	-	-	-	-	1	30/8/10	3/9/10	30/9/10
Aristocrat Leisure	ordinary	ALL	I	3.5	-	3.5	-	3	-	4.5	-	3/9/10	9/9/10	30/9/10
ASG Grp Ltd	ordinary	ASZ	F	5	-	6.5	100	3	-	-	4.5	20/9/10	24/9/10	7/10/10
ASK Funding Ltd	ordinary	AKF	F	0.36	-	0.36	100	4	-	-	1.3	24/9/10	30/9/10	15/10/10
ASX Ltd	ordinary	ASX	F	84	-	173.1	100	3	-	-	74.5	30/8/10	3/9/10	27/9/10
Auckland Internation	ordinary	AIA	F	-	-	2.9382	-	3	-	-	3.7464	1/10/10	8/10/10	22/10/10
Aurora Prop	ordinary units	AUP	F	11	-	52	-	3	-	-	25	24/6/10	30/6/10	17/9/10
Ausdrill Ltd	ordinary	ASL	F	6	-	11	100	3	-	-	6	14/10/10	20/10/10	29/10/10
Austal Ltd	ordinary	ASB	F	6	-	6	100	-	-	-	6	17/9/10	23/9/10	7/10/10
Austbrokers Hldgs	ordinary	AUB	F	15	-	22.5	100	3	-	-	13.5	29/9/10	6/10/10	22/10/10
Austereo Grp Ltd	ordinary	AEO	F	5.7	-	9.7	100	-	-	-	5.1	25/10/10	29/10/10	19/11/10
Austin Engineer	ordinary	ANG	F	7.5	-	9.5	100	-	-	-	6.5	6/9/10	10/9/10	8/10/10
Aust Education	units	AEU	Q1	0.67	-	0.67	-	-	-	-	-	31/8/10	6/9/10	20/9/10
Aust Ethical	ordinary	AEF	F	150	-	200	100	4	-	-	132	20/9/10	24/9/10	15/10/10
Aust Foundation	ordinary	AFI	F	13	-	21	100	3	-	-	13	13/8/10	19/8/10	1/9/10
Aust Leaders	ordinary	ALF	F	8	-	12	100	3	-	2	3	23/8/10	27/8/10	10/9/10
Aust United Invest	ordinary	AUI	F	14	-	25.5	100	3	-	-	13.5	23/8/10	27/8/10	24/9/10
Automotive Hldgs	ordinary	AHE	F	10	-	17	100	-	-	-	10	13/9/10	17/9/10	1/10/10

(*Source:* John Bellingham, *Smart Investor*, September 2010, p. 78.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

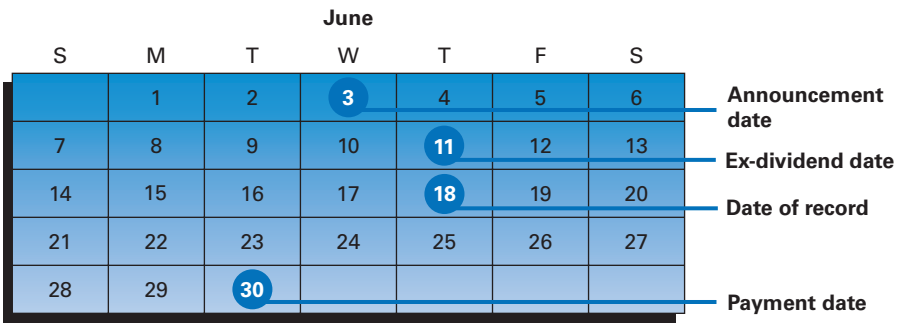
date on which the investor must be a registered shareholder of the company to be entitled to a dividend. When the board specifies the date of record, all investors who are official shareholders of the company as of the close of business on that date will receive the dividends that have just been declared. These shareholders are often referred to as *holders of record*. The **payment date**, also set by the board of directors, generally follows the date of record by a week or two. It is the actual date on which the company will mail dividend cheques to holders of record. (Note that in the dividend news reported in Figure 6.3, this date is called the *payable date*.)

payment date
the actual date on which the company will mail dividend cheques to shareholders (also known as the payable date).

Because of the time needed to make bookkeeping entries after a share is traded, the share will sell on an ex-dividend basis for five business days prior to the date of record. That is, the **ex-dividend date** will dictate whether you were an official shareholder and therefore eligible to receive the declared dividend. If you sell a share *on or after* the ex-dividend date, you receive the dividend. If you sell before this date, the new shareholder will receive the recently declared dividend. (This is reported in Figure 6.3 as the *ex date*.)

ex-dividend date
five business days before the date of record; it determines whether one is an official shareholder of a company and thus eligible to receive a declared dividend.

To see how this all works, consider the following sequence of events. On 3 June, the board of directors of Cash Cow Ltd declares a half-yearly dividend of 50 cents a share to holders of record on 18 June, with cheques to be mailed on 30 June. The calendar below shows these various dividend dates. If you owned 200 shares on 10 June, you would receive a cheque sometime after 30 June to the amount of $100.


June
S M T W T F S
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30
Announcement date
Ex-dividend date
Date of record
Payment date

Types of Dividends

Normally, companies pay dividends in the form of cash, though sometimes they do so by issuing additional shares. The first type of distribution is known as a **cash dividend**; the second is called a **stock dividend**. Occasionally, dividends are paid in still other forms, such as a *stock spin-off*, which we discussed earlier in this chapter, or perhaps even samples of the company's products. But dividends in the form of either cash or shares remain by far the most popular, so let's take a closer look at them.

cash dividend
payment of a dividend in the form of cash.

stock dividend
payment of a dividend in the form of additional shares.

Cash or Shares More companies use *cash dividends* than any other type of dividend payment procedure. A nice by-product of cash dividends is that *they tend to increase over time, as companies' earnings grow*. Such a tendency appeals to investors because a steady stream of dividends—even better, a *steadily increasing* stream of dividends—acts to shore up share returns in soft markets.

A convenient way of assessing the amount of dividends received is to measure the share's **dividend yield**. Basically, dividend yield is a measure of ordinary dividends on a relative (percentage) basis rather than on an absolute (dollar) basis. Dividend yield, in effect, indicates the rate of current income earned on the investment dollar. It is calculated as follows:

dividend yield
a measure that relates dividends to share price and puts ordinary dividends on a relative (percentage) rather than absolute (dollar) basis.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Equation 6.2

$$\text{Dividend yield} = \frac{\text{Annual dividends received per share}}{\text{Current market price of the share}}$$

Thus, a company that annually pays 20 cents per share in dividends to its shareholders, and whose shares are trading at $4, has a dividend yield of 5%. To put dividend yield into perspective, it is often helpful to look at a company's **dividend payout ratio**. The payout ratio describes that portion of earnings per share (EPS) that is paid out as dividends. It is calculated as follows:

dividend payout ratio
the portion of earnings per share (EPS) that a company pays out as dividends.

Equation 6.3

$$\text{Dividend payout ratio} = \frac{\text{Dividends per share}}{\text{Earnings per share}}$$

A company would have a payout ratio of 50% if it had earnings of 40 cents a share and paid annual dividends of 20 cents a share.

Stock Dividends Occasionally, a company may declare a *stock dividend*. A stock dividend simply means that the dividend is paid in additional shares. For instance, if the board declares a 10% stock dividend, then each shareholder will receive one new share for each 10 shares currently owned.

Although they seem to satisfy some investors, *stock dividends really have no value*, because they represent the receipt of something already owned. The market responds to such dividends by adjusting share prices according to the terms of the stock dividend. Thus, in the example above, a 10% stock dividend normally leads to a decline of around 10% in the share price. The market value of your shareholdings after a stock dividend, therefore, is likely to be about the same as it was before the stock dividend. For example, if you owned 200 shares that were trading at $10 per share, the total market value of your investment would be $2000. After a 10% stock dividend, you'd own 220 shares (i.e. 200 shares × 1.10), but because of the stock dividend, they would probably be trading at around $9.10 per share. You would own more shares, but they would be trading at lower prices, so the total market value of your investment would remain about the same (i.e. 220 × $9.10 = $2002).

One important distinction between the payment of a cash dividend and a stock dividend relates to imputation credits. While both types of dividend are debited against the company's franking credit account, only cash dividends carry the credit to the shareholder. The shareholder receives no franking credit from a stock dividend.

Dividend Reinvestment Plans

dividend reinvestment plans (DRPs)
plans in which shareholders have cash dividends automatically reinvested into additional shares of the company.

Do you want to have your cake and eat it too? When it comes to dividends, there is a way to do just that. You can participate in a **dividend reinvestment plan** (**DRP**). In these corporate-sponsored programs, shareholders can have their cash dividends automatically reinvested into additional shares of the company. (Similar reinvestment programs are offered by managed funds, which we'll discuss in Chapter 12, and by some brokerage houses.) The basic investment philosophy is that *if the company is good enough to invest in, it's good enough to reinvest in*. As Table 6.2 demonstrates, such an approach can have a tremendous impact on your investment position over time.

Dividend reinvestment plans provide investors with a convenient and inexpensive way to accumulate capital. Shares in most DRPs are acquired free of any brokerage

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 6.2 Cash or Reinvested Dividends?

Situation: You buy 100 shares at $25 a share (total investment $2500); the security currently pays $1 a share in annual dividends. The price of the share increases at 8% per year; dividends grow at 5% per year.

Investment Period	Number of Shares Held	Market Value of Shareholdings	Total Cash Dividends Holdings
		Take Dividends in Cash	
5 years	100	$ 3 672	$ 552
10 years	100	5 397	1 258
15 years	100	7 930	2 158
20 years	100	11 652	3 307
		Full Participation in Dividend Reinvestment Plan (100% of cash dividends reinvested)	
5 years	115.59	$ 4 245	$ 0
10 years	135.66	7 322	0
15 years	155.92	12 364	0
20 years	176.00	20 508	0

FIGURE 6.4

Example of a Dividend Reinvestment Plan Statement

ABC Limited
ACN 004 820 419
Registered Office: Level 20, 1 King St, Melbourne Vic 3000

Dividend Reinvestment Plan Statement

PLEASE RETAIN FOR YOUR TAX RECORDS

Name and address of Shareholder
MR. JOHN J. JONES
1 JONES STREET
JONESVILLE VIC. 3333

Dividend Payment Date:
Record Date:
Certificate Number:
Holder Number:

ALL VALUES ARE IN AUSTRALIAN DOLLARS

Description of Shares	Dividend Rate Cents per Share (1)	Number of Participating Shares: (2)	Unfranked Amount:(3)	Franked Amount:(4)(7)	Franking Credit:(5)
ORDINARY SHARES	25 CENTS	1000	0.00	$250.00	$140.63

THIS INFORMATION RELATES TO THE DIVIDEND ON YOUR HOLDING OF SHARES PARTICIPATING IN THE DIVIDEND REINVESTMENT PLAN (DRP)

THIS DIVIDEND IS FULLY FRANKED (4)
TAX FILE NUMBER NOT RECEIVED OR RECORDED (14)

Cash Balance brought forward: (8)	$	3.50
Less Withholding Tax (if applicable): (6)	$	0.00
Total available for reinvestment: (9)	$	253.50
The Dividend amount has been applied to the allotment of 42 shares (10) at $ 6.00 (11)	$	252.00
Balance carried forward in your Plan account: (12)	$	1.50
Total number of shares now participating in the DRP: (13)		1042

THE TOTAL DIVIDEND TOGETHER WITH THE FRANKING TAX CREDIT SHOULD BE DISCLOSED AS ASSESSABLE INCOME ON YOUR TAX RETURN

Please advise promptly by letter if you change your name or address

The ABC Share Registrar
C/- Accountants Pty Ltd
3rd Floor, 20 Queen St,
Melbourne VIC 3000
Telephone: 61(03) 9000 9000
Facsimile: 61(03) 9001 9001

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

commissions, and most plans allow *partial participation*. That is, participants may specify a portion of their shares for dividend reinvestment and receive cash dividends on the rest. Some plans even sell shares to their DRP investors at below-market prices—often at discounts of 2–10%. In addition, most plans will credit fractional shares to the investor's account, and many will even allow investors to buy additional shares.

Shareholders can join dividend reinvestment plans by simply sending a completed authorisation form to the company. Once you're in, the number of shares you hold will begin to accumulate with each dividend date. There is a catch, however: even though these dividends take the form of additional shares, you must still pay taxes on them *as though they were cash dividends*. Don't confuse these dividends with stock dividends—*reinvested dividends are treated as taxable income in the year they're received*, just as though they had been received in cash.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

6.9 Briefly explain how the dividend decision is made. What corporate and market factors are important in deciding whether, and in what amount, to pay dividends?

6.10 Why is the *ex-dividend date* important to shareholders? If a share is sold on the ex-dividend date, who receives the dividend—the buyer or the seller? Explain.

6.11 What is the difference between a *cash dividend* and a *stock dividend*? Which would be more valuable to you? How does a stock dividend compare to a stock split? Is a 200% stock dividend the same as a 2-for-1 stock split? Explain.

6.12 What are *dividend reinvestment plans*, and what benefits do they offer to investors? Are there any disadvantages?

Types and Uses of Ordinary Shares

LG 6

Ordinary shares appeal to investors because they offer the potential for everything from current income and stability of capital to attractive capital gains. The market contains a wide range of shares, from the most conservative to the highly speculative. Generally, the kinds of shares that investors seek will depend on their investment objectives and investment programs. We will examine several of the more popular types of shares here, as well as the various ways such securities can be used in different types of investment programs.

Types of Shares

As an investor, one of the things you will want to understand is the market system used to classify share. A share's general classification reflects not only its fundamental source of return but also the quality of the company's earnings, the issue's susceptibility to market risks, the nature and stability of its earnings and dividends, and even its susceptibility to adverse economic conditions. Such insight is useful in selecting shares that will best fit your overall investment objectives.

Among the many different types of shares, the following are the most common: blue chips, value shares, growth shares, tech shares, speculative shares, cyclical shares, defensive shares, mid-cap shares and small-cap shares. We will now look at each of these to see what they are and how investors might use them.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

WHO BLOWS THE BUBBLES?—Mum and dad investors are ridiculed by professional investors as the amateurs of the sharemarket. But when it comes to getting sucked in to sharemarket bubbles, it seems that the professional investors act like amateurs themselves.

Two Australian researchers, Dr Julia Henker and Dr Thomas Henker, have debunked the traditional view that it is naïve individual investors that generate the extreme swings in sharemarket bubbles. They are perceived to be 'noise traders' who act on rumours and tips, latch on to momentum without having any real analysis to justify their beliefs, and take recent share prices as a guide to value. It is widely held that such investors are more likely to act irrationally, whereas institutional investors have processes and systems that should temper their behaviour.

But the Henkers' research identified shares that had gone through a bubble where prices had undergone a sustained and dramatic price increase unrelated to movements in the overall market or the fundamentals of the company, and subsequently fallen back to their earlier values. It then looked at the trading patterns of different groups of investors during that period.

The results showed that it was domestic institutions rather than retail investors that fuelled the bubbles. They tended to be net buyers during the rise and net sellers of the shares after they peaked. The retail investors on the other hand were more of a moderating influence, dampening volatility rather than exacerbating it. Retail investors were selling gradually through the bubble growth with a larger sales volume immediately before the peak, and then buying after the price had peaked.

The researchers conclude that apparently professional investors are susceptible to the same mistakes as everyone else, even though they have guidelines, models and resources dedicated to minimising them. Their human instincts and emotions, like everyone else's, lead to herd behaviour, overconfidence, and good old fear- and greed-based trading.

(*Source:* Based on Annette Sampson 2010, 'Bursting the Big Investors' Bubble', *Sydney Morning Herald*, Weekend Business section, 30–31 January.)

blue-chip shares
financially strong, high-quality shares with long and stable records of earnings and dividends.

Blue-Chip Shares

Blue chips are the cream of the crop. They are shares that are unsurpassed in quality and have a long and stable record of earnings and dividends. **Blue-chip shares** are issued by large, well-established companies that have impeccable financial credentials. These companies hold important, often leading, positions in their industries and frequently set the standards by which other companies are measured.

Not all blue chips are alike, however. Some provide consistently high dividend yields; others are more growth-oriented. Good examples of blue-chip growth companies are Westpac, ANZ, Westfield and BHP Billiton.

While blue-chip shares are not immune from bear markets, they do nonetheless provide the potential for relatively attractive long-term returns. They tend to appeal to investors who are looking for quality investment outlets that offer decent dividend yields and respectable growth potential. They are often used for long-term investment purposes and, because of their relatively low risk, are a way of obtaining modest but dependable rates of return.

value (or income) shares
shares with long and sustained records of paying higher-than-average dividends.

Value (or Income) Shares

Some shares are appealing simply because of the dividends they pay. This is the case with **value** (or **income**) **shares**. These issues have a long and sustained record of regularly paying higher-than-average dividends. Value shares are ideal for those who seek a relatively safe and high level of current income from their investment capital. But there's more: holders of value shares (unlike bonds and preference shares) can expect the dividends they receive to increase regularly over time. Thus, a company that paid, say, $1.00 a share in dividends in 1993 would be paying just over $1.80 a share in 2008, if dividends had been growing at around 4% per year. That's a big jump in dividends, and it's something that can have a definite impact on total return.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The major disadvantage of value shares is that some of them may be paying high dividends because of limited growth potential. Indeed, it's not unusual for them to exhibit only low or modest rates of growth in earnings. This does not mean that such companies are unprofitable or lack future prospects. Quite the contrary: most companies whose shares qualify as value shares are highly profitable organisations with excellent future prospects. A number of value shares are among the giants of industry, and many are also classified as quality blue chips. Examples include Fosters, Woolworths and QBE Insurance. By their very nature, value shares are not exposed to a great deal of business and market risk. They are, however, subject to a fair amount of interest rate risk.

Growth Shares Shares that have experienced, and are expected to continue experiencing, consistently high rates of growth in operations and earnings are known as **growth shares**. A good growth share might exhibit a *sustained* rate of growth in earnings of 15% to 18% per year over a period when ordinary shares, on average, are experiencing growth rates of only 6% to 8%. Generally speaking, established growth companies combine steady earnings growth with high returns on equity. They also have high operating margins and plenty of cash flow to service their debt. Brambles Industries, Cochlear, Toll Holdings and Westfield are all prime examples of growth shares. As this list suggests, some growth shares also rate as blue chips and provide quality growth, whereas others represent higher levels of speculation.

growth shares
shares that experience high rates of growth in operations and earnings.

Growth shares normally pay little or nothing in the way of dividends. Their payout ratios seldom exceed 10% to 15% of earnings. Instead, all or most of the profits are reinvested in the company and used to help finance rapid growth. Thus, the major source of return to investors is price appreciation—and that can have both a good side and a bad side. That is, with growth shares, when the markets are good, these shares are hot. When the markets turn down, so do these shares, often in a big way. Growth shares generally appeal to investors who are looking for attractive capital gains rather than dividends and who are willing to assume a higher element of risk.

Tech Shares Over the past 15 years or so, **tech shares** have become such a unique force in the market (both positive and negative) that they deserve to be put in a class all their own. Tech shares basically represent the technology sector of the market. They include companies that produce or provide everything from computers, data storage, computer software, and computer hardware to peripherals, Internet services, content providers, networking and wireless communications. These companies provide the high-tech equipment, networking systems and online services to all lines of businesses, education, health care, communications, government agencies and the home. There are around 30 technology shares trading on the ASX.

tech shares
shares that represent the technology 'new-economy' sector of the market.

These shares would probably fall into either the *growth share* category or the *speculative share* class, although some of them are legitimate *blue chips*. Tech shares today may, indeed, offer the potential for attractive (and, in some cases, phenomenal) returns. But they also involve considerable risk, and are probably most suitable for the more risk-tolerant investor.

Speculative Shares Shares that lack sustained records of success but still offer the potential for substantial price appreciation are known as **speculative shares**. Perhaps investors' hopes are spurred by a new management team that has taken over a troubled company or by the introduction of a promising new product. Other times, it's the hint that some new information, discovery or production technique will favourably affect the growth prospects of the company. Speculative shares are a special breed of securities, and they enjoy a wide following, particularly when the market is bullish.

speculative shares
shares that offer the potential for substantial price appreciation, usually because of some special situation, such as new management or the introduction of a promising new product.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Generally speaking, the earnings of speculative shares are uncertain and highly unstable. These shares are subject to wide swings in price, and they usually pay little or nothing in dividends. On the plus side, speculative shares offer attractive growth prospects and the chance to 'hit it big' in the market. To be successful, however, an investor has to identify the big-money winners before the rest of the market does. Speculative shares are highly risky; they require not only a strong stomach but also a considerable amount of investor know-how. They are used to seek capital gains, and investors will often aggressively trade in and out of these securities as the situation demands.

cyclical shares
shares whose earnings and overall market performance are closely linked to the general state of the economy.

Cyclical Shares **Cyclical shares** are issued by companies whose earnings are closely linked to the general level of business activity. They tend to reflect the general state of the economy and to move up and down with the business cycle. Companies that serve markets tied to capital equipment spending by business, or to consumer spending for big-ticket, durable items like houses and cars, typically head the list of cyclical shares. Examples include Amcor, Pioneer, CSR and Pacific Dunlop.

Cyclical shares generally do well when the economy is moving ahead, but they tend to do *especially well* when the country is in the early stages of economic recovery. They are, however, perhaps best avoided when the economy begins to weaken. Cyclical shares are probably most suitable for investors who are willing to trade in and out of these issues as the economic outlook dictates and who can tolerate the accompanying exposure to risk.

defensive shares
shares that tend to hold their own, and even do well, when the economy starts to falter.

Defensive Shares Sometimes it is possible to find shares with prices that remain stable or even increase when general economic activity is tapering off. These securities are known as **defensive shares**. They tend to be less affected than the average issue by downswings in the business cycle.

Defensive shares include mining and resource companies, infrastructure and utility companies, as well as industrial and consumer goods companies that produce or market such staples as beverages, foods and pharmaceuticals. Examples of defensive shares are Santos, Simsmetal, Boral, BHP, Transurban, Hills Motorway, United Energy and Envestra. Perhaps the best known of all defensive shares, particularly in inflationary periods, are gold mining shares. These shares blossom when inflation becomes a serious problem. Defensive shares are commonly used by more aggressive investors. Such investors tend to 'park' their funds temporarily in defensive shares while the economy remains soft, or until the investment atmosphere improves.

Mid-Cap Shares As explained earlier, a share's size is based on its market value—or, more commonly, on what is known as its *market capitalisation* (the market price of the share times the number of shares outstanding). Generally speaking, the sharemarket can be broken into three segments, as measured by a share's market 'cap'.

large-cap shares
shares in companies with high market capitalisation.

Large-cap shares in Australia are those that are included in two share price indices, the S&P ASX 20 and the S&P ASX 50, which comprise the 20 or 50 largest shares by market capitalisation in Australia. These indices represent 58% and 75%, respectively, of the total market capitalisation. Other important Australian share indices are the S&P ASX 100 and S&P ASX 200, which include companies chosen for liquidity and size. The Australian definition is a relative measure of size, in contrast to the US definition of large-cap shares, which is an absolute definition: market capitalisation of more than $4 billion. **Mid-cap shares** in Australia are represented by the S&P ASX Mid-Cap50, which are the 50 companies included in the S&P ASX 100 but not in the S&P ASX 50. This index represents 9% of total market capitalisation. Again, it differs

mid-cap shares
shares in companies with market capitalisation below the large-cap shares.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

small-cap shares
shares in companies with low market capitalisation.

from the US definition, which is based on size alone: market capitalisation of between $1 billion and $4 billion. **Small-cap shares** in Australia are represented by the S&P ASX Small Ordinaries Index, which are the 200 companies in the S&P ASX 300 excluding those large companies in the S&P ASX 100. This index represents 7% of total market capitalisation. In contrast, the US definition is market capitalisation of less than $1 billion.

The large-cap shares are the real biggies—the Telstras, NABs and BHPs of the investment world. Although there are far fewer large-cap shares than any other size, these companies account for the majority of the total market value of all Australian equities. But as the saying goes, bigger isn't necessarily better. Nowhere is that statement more accurate than in the sharemarket. Indeed, *both* the small-cap and mid-cap segments of the market tend to hold their own, or even to outperform the large-cap shares over time.

Mid-cap shares are a special breed, and offer investors some attractive return opportunities. They provide much of the sizzle of small-share returns, without as much price volatility. (We will look at small-cap shares soon.) At the same time, because mid-caps are fairly good-sized companies and many of them have been around for a long time, they offer some of the safety of the big, established shares. Although these securities offer a nice alternative to large shares without the uncertainties of small-caps, they probably are most appropriate for investors who are willing to tolerate a bit more risk and price volatility.

Small-Cap Shares Some investors consider small companies, known as small-cap shares, to be in a class by themselves in terms of attractive return opportunities. In many cases, this has turned out to be true. Small-caps are those companies with market capitalisation under $100 million at listing. Because of their size, spurts of growth can have dramatic effects on their earnings and share prices. Freedom Furniture, Computer Power and Nautilus are some of the better known small-cap shares. Although some small-caps are solid companies with equally solid financials, that is not the case with most of them. Indeed, because many of these companies are so small, they don't have a lot of shares outstanding and they are not widely traded. In addition, small-company shares have a tendency to be 'here today and gone tomorrow'. Although some of these shares may hold the potential for high returns, investors should also be aware of the very high risk exposure that comes with many of them.

A special category of small-company shares is the so-called *initial public offering (IPO)*. IPOs fall into two categories: small and large. Most IPOs are small, relatively new companies that are going public for the first time. (Prior to their public offering, these companies were privately held and *not* publicly traded.) Like other small-cap shares, IPOs are attractive because of the substantial—sometimes phenomenal—capital gains that investors can earn. Of course, there is a catch: in order to stand a chance of buying some of the better, more attractive IPOs, you need to be either a big-time trader or a preferred client of the broker. Otherwise, the only IPOs you are likely to hear of will be the ones the big guys don't want—which should tell you something about that IPO. More often than not, the small individual investor gets a chance to buy a new issue only after it's been driven way up in price and the initial investors start bailing out, taking their profits with them. Surprisingly, this may take only a few hours or days to occur. If you are not in on the first day, the odds are that your returns will be mediocre, at best. It's an open secret that when it comes to hot IPOs, most individual investors stand little chance of even playing the game, much less winning.

Without a doubt, IPOs are extremely high-risk investments, with the odds stacked against the investor. Because there is no market record to rely on, these shares should

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

be used only by investors who know what to look for in the company and who can tolerate substantial exposure to risk. IPOs tend to flourish when the market heats up. They very definitely are faddish, their ranks often dominated by trendy retail outlets, food chains and high-tech companies.

The other category of IPO which has featured prominently in the Australian sharemarket in recent years is the large IPO, in which a large organisation seeks to change its ownership basis by floating on the sharemarket. Examples include government privatisations (and partial privatisations) such as Telstra, Commonwealth Bank, CSL and Qantas; demutualisations such as St George Bank and AMP; and private companies floating, such as Woolworths and Cable and Wireless Optus.

Investing in Foreign Shares

One of the most dramatic changes to occur in our financial markets in the past 20 years was the trend towards globalisation. Indeed, globalisation became the buzzword of the 1990s, and nowhere was that more evident than in the world's equity markets. Consider, for example, that in 1970 the US sharemarket accounted for fully *two-thirds of the world market*. In essence, it was twice as big as all the rest of the world's sharemarkets *combined*. That is no longer true: by 2008, the US share of the world equity market had dropped to approximately 35%. The Australian market is less than 2% of the global sharemarket.

Today, the world equity markets are dominated by just six markets, which together account for about 80% of the global total. The United States, by far, has the biggest equity market, which in 2008 had a total value of $11.6 *trillion*. In a distant second place was Japan (at less than one-third the size of the US market), closely followed by the NYSE Euronext (which covers several countries) and the United Kingdom. Rounding out the list were the sharemarkets in Shanghai, Hong Kong, Germany and Canada.

Comparative Returns Table 6.3 summarises total annual returns (in US dollars) for five large equity markets over the 25-year period from 1984 through 2008, plus Australia. Australian returns (not available for the whole period) vary from a low of –16.2% in 1990 to a high of 45.0% in 1986. Australia finished first two times (1988 and 1991), and was last in nine years. Clearly, investing in foreign markets is *not* for the uninitiated. You have to know what you're doing and be prepared to tolerate a good deal of market risk. Although most major brokerage houses are set up to accommodate investors interested in buying foreign securities, there are still many logistical problems to be faced. To begin with, you have to cope with currency fluctuations and changing foreign exchange rates, because, as we'll see below, these can have a dramatic impact on your returns. But that's just the start: you also have to deal with different regulatory and accounting standards. The fact is that most foreign markets, even the bigger ones, are not as closely regulated as Australian exchanges. Investors in foreign markets, therefore, may have to put up with insider trading and other practices that can cause wild swings in market prices. Finally, there are the obvious language barriers, tax problems and general 'red tape' that all too often plague international transactions. The returns from direct foreign investments can be substantial, but so can the obstacles placed in your way.

Putting Global Returns in Perspective The whole process of global investing is a bit more complicated and more risky than domestic investing. The reason is that when investing globally, *you have to pick both the right share and the right market*. Basically, foreign shares are valued in much the same way as domestic shares. Indeed, the same

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 6.3 Comparative Annual Returns in the World's Major Equity Markets, 1984–2008

	France	Germany	Switzerland	United Kingdom	United States	Australia
2008	40.9%	42.6%	34.0%	31.1%	–37.2%	na
2007	3.1	20.4	0.0	5.1	5.6	na
2006	22.6	24.1	20.6	16.4	15.8	na
2005	10.6	10.5	17.1	7.4	1.7	na
2004	19.2	16.7	15.6	19.6	5.3	na
2003	41.0	64.8	35.0	32.1	28.3	na
2002	20.8	32.9	10.0	15.2	–14.5	na
2001	22.0	21.9	21.0	14.0	–5.3	na
2000	4.1	15.3	6.4	11.5	–4.6	na
1999	29.7	20.5	–6.6	12.4	26.7	18.7
1998	42.1	29.9	24.0	17.8	17.8	7.1
1997	12.4	25.0	44.8	22.6	24.4	–9.5
1996	21.6	14.0	2.8	27.2	28.0	17.7
1995	14.8	17.0	45.0	21.3	35.7	12.5
1994	7.3	3.1	30.0	4.4	4.9	1.4
1993	19.6	34.8	41.7	19.0	16.4	33.4
1992	5.2	2.1	26.0	14.0	7.2	–6.1
1991	18.6	8.7	16.8	16.0	23.3	35.8
1990	13.3	8.8	5.1	10.4	–0.4	–16.2
1989	37.6	48.2	28.0	23.1	30.7	10.8
1988	37.1	19.8	5.8	4.1	15.5	38.2
1987	13.9	24.6	9.2	35.2	5.9	9.5
1986	79.9	36.4	34.7	27.7	26.1	45.0
1985	84.2	138.1	109.2	53.4	31.7	21.1
1984	4.8	5.2	11.1	5.3	1.2	–12.4
Average Annual Returns Over Extended Holding Periods						
5 years						
2004–2008	5.2%	7.7%	5.8%	5.0%	0.6%	na
10 years						
1999–2008	5.5	4.1	2.6	3.0	1.6	na
15 years						
1994–2008	8.8	8.2	8.7	7.0	8.5	na
25 years						
1984–2008	14.0	11.4	11.7	11.9	11.1	na

Note: Total return = dividend income + capital gain (or loss).
(*Source:* Elroy Dimson, Paul Marsh and Mike Staunton 2002, *Triumph of the Optimists: 101 Years of Global Investment Returns,* Princeton University Press, Princeton, NJ. Copyright © 2002. Reprinted by permission of Princeton University Press. Additional updates provided by authors.)

variables that drive Australian share prices (earnings, dividends and so on) also drive share values in foreign markets. On top of this, each market reacts to its own set of economic forces (inflation, interest rates, level of economic activity), which set the tone of the market. At any given time, some markets are performing better than others. The challenge facing global investors is to be in the right market at the right time.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

All shares produce the same two basic sources of returns: dividends and capital gains (or losses). But with global investing, there is a third variable—*currency exchange rates*—that affects returns to global investors. In particular, as the Australian dollar weakens or strengthens relative to a foreign currency, the returns to Australian investors from foreign shares increase or decrease accordingly. In a global context, total return to Australian investors in foreign securities is defined as follows:

Equation 6.4

$$\text{Total return (in Australian dollars)} = \text{Current income (dividends)} + \text{Capital gains (or losses)} \pm \text{Changes in currency exchange rates}$$

Because current income and capital gains are in the 'local currency' (the currency in which the foreign security is denominated, such as the euro or the Japanese yen), we can shorten the total return formula to:

Equation 6.5

$$\text{Total return (in Australian dollars)} = \text{Returns from current income and capital gains (in local currency)} \pm \text{Returns from changes in currency exchange rates}$$

Thus, the two basic components of total return are *those generated by the shares themselves* (dividends plus change in share prices) and *those derived from movements in currency exchange rates*.

Measuring Global Returns Employing the same two basic components noted in Equation 6.5, we can compute total return in Australian dollars by using the holding period return (HPR) formula, as modified for changes in currency exchange rates.

Equation 6.6

$$\text{Total return (in Australian dollars)} = \left[\frac{\text{Ending value of share in foreign currency} + \text{Amount of dividends received in foreign currency}}{\text{Beginning value of share in foreign currency}} \times \frac{\text{Exchange rate at } \textit{end} \text{ of holding period}}{\text{Exchange rate at } \textit{beginning} \text{ of holding period}} \right] - 1.00$$

In Equation 6.6, the 'exchange rate' represents the *value of the foreign currency in Australian dollars* (i.e. how much one unit of the foreign currency is worth in A$).

This modified HPR formula is best used over investment periods of one year or less. Also, because it is assumed that dividends are received at the same exchange rate as the ending price of the share, this equation provides only an approximate (although fairly close) measure of return. Essentially, the first component of Equation 6.6 provides returns on the share in local currency, and the second element accounts for the impact of changes in currency exchange rates.

To see how this formula works, consider an Australian investor who buys several hundred shares of Siemens AG, the German electrical engineering and electronics company that trades on the Frankfurt Stock Exchange. Since Germany is part of the European Community (EC), its currency is the *euro*. Let's assume that the investor paid a price *per share* of 90.48 euros for the share, at a time when the exchange rate

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

between the Australian dollar and the euro (A$/A) was $0.945, meaning a euro was worth almost 95 (Australian) cents. The share paid *annual* dividends of A5 per share. Twelve months later, the share was trading at A94.00, when the A$/A exchange rate was $1.083. Clearly, the share went up in price and so did the euro, so the investor must have done all right. To find out just what kind of return this investment generated (in Australian dollars), we'll have to use Equation 6.6.

$$\begin{aligned}\text{Total return (in Australian dollars)} &= \left(\frac{\text{A}94.00 + \text{A}5.00}{\text{A}90.48} \times \frac{\$1.083}{\$0.945}\right) - 1.00\\ &= (1.0942 \times 1.1460) - 1.00\\ &= (1.2540) - 1.00\\ &= \underline{\underline{25.4\%}}\end{aligned}$$

With a return of 25.4%, the investor obviously did quite well. However, *most of this return was due to currency movements, not to the behaviour of the share*. Look at just the first part of the equation, which shows the return (in local currency) *earned on the share* from dividends and capital gains: 1.0942 – 1.00 = 9.42%. Thus, the security itself produced a return of less than 9.50%. All the rest of the return—about 16% (i.e. 25.40 – 9.42)—came from the change in currency values. In this case, the value of the Australian dollar went down relative to the euro and thus added to the return.

Currency Exchange Rates As we have just seen, exchange rates can have a dramatic impact on investor returns. They can convert mediocre returns or even losses into very attractive returns—and vice versa. Only one thing determines whether the so-called *currency effect* is going to be positive or negative: the behaviour of the Australian dollar relative to the currency in which the security is denominated. In essence, *a stronger dollar has a negative impact on total returns to Australian investors, and a weaker dollar has a positive impact*. Thus, other things being equal, the best time to be in foreign securities is when the dollar is *falling*.

Of course, the greater the amount of fluctuation in the currency exchange rate, the greater the impact on total returns. The challenge facing global investors is to find not only the best-performing foreign share(s) but also the best-performing foreign currencies. You want the *value of both the foreign share and the foreign currency to go up over your investment horizon*.

Alternative Investment Strategies

Basically, original shares can be used: (1) as a 'storehouse of value', (2) as a way to accumulate capital, and (3) as a source of income. Storage of value is important to all investors, as nobody likes to lose money. However, some investors are more concerned about it than are others. They rank safety of principal as their most important share selection criteria. These investors are more quality-conscious and tend to gravitate towards blue chips and other non-speculative shares.

Accumulation of capital, in contrast, is generally an important goal to those with long-term investment horizons. These investors use the capital gains and/or dividends that shares provide to build up their wealth. Some use growth shares for this purpose, others do it with income shares, and still others use a little of both.

Finally, some investors use shares as a source of income. To them, a dependable flow of dividends is essential. High-yielding, good-quality income shares are usually their preferred investment vehicle.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Individual investors can use various *investment strategies* to reach their investment goals. These include buy-and-hold, current income, quality long-term growth, aggressive share management, and speculation and short-term trading. The first three strategies appeal to investors who consider storage of value important. Depending on the temperament of the investor and the time he or she has to devote to an investment program, any of these strategies might be used to accumulate capital. In contrast, the current-income strategy is the logical choice for those using shares as a source of income.

We discuss these five strategies in more detail below. You should understand these strategies so that you can choose which one best suits your needs.

Buy-and-Hold Buy-and-hold is the most basic of all investment strategies, and certainly one of the most conservative. The objective is to place money in a secure investment outlet (safety of principal is vital) and watch it grow over time. In this strategy, investors select high-quality shares that offer attractive current income and/or capital gains and hold them for extended periods—perhaps as long as 10 to 15 years. This strategy is often used to finance future retirement plans, to meet the educational needs of children, or simply to accumulate capital over the long haul. Generally, investors pick a few good shares and invest in them on a regular basis for long periods of time—until either the investment climate or corporate conditions change dramatically.

Buy-and-hold investors regularly add fresh capital to their portfolios (many treat them like savings plans). Most also plough the income from annual dividends back into the portfolio and reinvest in additional shares (often through dividend reinvestment plans). Long popular with so-called *value-oriented investors*, this approach is used by quality-conscious individuals who are looking for competitive returns over the long haul.

Current Income Some investors use original shares to seek high levels of current income. Original shares are desirable for this purpose, not so much for their high dividend yields but because their *dividend levels tend to increase over time*. In this strategy, safety of principal and stability of income are vital; capital gains are of secondary importance. Quality income shares are the obvious choice for this strategy. Some investors adopt it simply as a way of earning high (and relatively safe) returns on their investment capital. More often, however, the current-income strategy is used by those who are trying to supplement their income. Indeed, many of these investors plan to use the added income for consumption purposes, such as a retired couple supplementing their retirement benefits.

Quality Long-Term Growth This strategy is *less conservative* than either of the first two in that it *seeks capital gains as the primary source of return*. A fair amount of trading takes place with this approach. Most of the trading is confined to *quality growth shares* (including some of the better tech shares, as well as blue chips and mid-caps). These shares offer attractive growth prospects and the chance for considerable price appreciation. A number of growth shares also pay dividends, which many growth-oriented investors consider *an added source of return*. But even so, this strategy still emphasises capital gains as the principal way to earn big returns.

This approach involves greater risk, because of its heavy reliance on capital gains. Therefore, a good deal of diversification is often used. Long-term accumulation of capital is the most common reason for using this approach, but compared to the buy-and-hold tactic, the investor aggressively seeks a bigger payoff by doing considerably more trading and assuming more market risk.

A variation of this investment strategy combines quality long-term growth with high income. This is the so-called *total-return approach* to investing. Although solidly

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

anchored in long-term growth, this approach also considers dividend income as a source of return. Investors who use the total return approach seek attractive long-term returns from *both* dividend income *and* capital gains by holding both income shares and growth shares in their portfolios. Or they may hold shares that provide both dividends and capital gains. In the latter case, the investor doesn't necessarily look for high-yielding shares, but for shares that offer the potential for *high rates of growth in their dividend streams*.

Total-return investors are very concerned about quality. Indeed, about the only thing that separates them from current-income and quality long-term growth investors is that total-return investors care more about the *amount of return* than about the *source of return*. For this reason, total-return investors seek the most attractive returns wherever they can find them—be it from a growing stream of dividends or from appreciation in the price of a share.

Aggressive Share Management Aggressive share management also seeks attractive rates of return through a fully managed portfolio. An investor using this strategy aggressively trades in and out of shares to achieve eye-catching returns, primarily from capital gains. Blue chips, growth shares, big-name tech shares, mid-caps and cyclical issues are the primary investment vehicles. More aggressive investors might even consider small-cap shares, including some of the more speculative tech shares and foreign shares.

This approach is similar to the quality long-term growth strategy. However, it involves considerably more trading, and the investment horizon is generally much shorter. For example, rather than waiting two or three years for a share to move, an aggressive share trader would go after the same investment payoff in six months to a year. Timing security transactions and turning investment capital over fairly rapidly are both key elements of this strategy. These investors try to stay fully invested in shares when the market is bullish. When the market weakens, they put a big chunk of their money into defensive shares or even into cash and other short-term debt instruments.

This aggressive strategy has substantial risks and trading costs. It also places real demands on the individual's time and investment skills. But the rewards can be equally substantial.

Speculation and Short-Term Trading Speculation and short-term trading characterise the least conservative of all investment strategies. The sole objective of this strategy is capital gains. The shorter the time in which the objective can be achieved, the better. Although investors who use this strategy confine most of their attention to speculative or small-cap shares and tech shares, they are not averse to using foreign shares (especially those in so-called *emerging markets*) or other forms of ordinary shares if they offer attractive short-term opportunities. Many speculators feel that information about the industry or company is less important than market psychology or the general tone of the market. It is a process of constantly switching from one position to another as new opportunities unfold.

Because the strategy involves so much risk, many transactions yield little or no profit, or even substantial losses. The hope is, of course, that when one does hit, it will be in a big way, and returns will be more than sufficient to offset losses. This strategy obviously requires considerable knowledge and time. Perhaps most important, it also requires the psychological and financial fortitude to withstand the shock of financial losses.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

6.13 Define and briefly discuss the investment merits of each of the following.

a. *Blue chips*
b. *Value shares*
c. *Mid-cap shares*
d. *IPOs*

6.14 Why do most value shares offer only limited capital gains potential? Does this mean the outlook for continued profitability is also limited? Explain.

6.15 With all the securities available in this country, why would an investor want to buy foreign shares? Briefly describe the two ways in which an investor can buy shares in a foreign company. As a domestic investor, which approach would you prefer? Explain.

6.16 Which *investment approach (or approaches)* do you feel would be most appropriate for a quality-conscious investor? What kind of investment approach do you think you'd be most comfortable with? Explain.

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Explain the investment appeal of ordinary shares and why individuals like to invest in them. Ordinary shares have long been a popular investment vehicle, largely because of the attractive return opportunities they provide. From current income to capital gains, there are ordinary shares available to fit any investment need.

LG 2 Describe share returns from an historical perspective and understand how current returns measure up to historical standards of performance. Share returns consist of both dividends and capital gains, although price appreciation is the key component. Over the long run, shares have provided investors with annual returns of around 10% to 12%. In the past 20 years, shares have generated average returns of over 14%.

LG 3 Discuss the basic features of ordinary shares, including issue characteristics, quotations and transaction costs. Ordinary shares are a form of equity capital, with each share representing partial ownership of a company. Publicly traded shares can be issued via a public offering or through a rights offering to existing shareholders. Companies can also increase the number of shares outstanding through a stock split. To reduce the number of shares in circulation, companies can buy back shares, either through an on-market offer, or an off-market purchase. The repurchased shares are cancelled. Occasionally, a company issues different classes of ordinary shares, known as classified shares.

Key Terms

residual owners, *p. 175*

classified shares, *p. 180*
equity capital, *p. 178*
private placement, *p. 179*
public offering, *p. 179*
publicly traded issues, *p. 179*
rights offering, *p. 179*
stock spin-off, *p. 179*
stock split, *p. 179*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 4 Understand the different kinds of share values. There are several ways to calculate the value of a share. Book value represents accounting value. Market value is a security's prevailing market price. Investment value is the amount that investors think the share should be worth.	book value, *p. 182* investment value, *p. 183* market value, *p. 183* par value, *p. 182*
LG 5 Discuss share dividends, types of dividends and dividend reinvestment plans. Companies often share their profits by paying out cash dividends to shareholders. Companies pay dividends only after carefully considering a variety of corporate and market factors. Sometimes companies declare stock dividends rather than, or in addition to, cash dividends. Many companies that pay cash dividends have dividend reinvestment plans, through which shareholders can automatically reinvest cash dividends in the company's shares.	cash dividend, *p. 186* date of record (books close date), *p. 185* dividend payout ratio, *p. 187* dividend reinvestment plan (DRP), *p. 187* dividend yield, *p. 186* earnings per share, *p. 184* ex-dividend date, *p. 186* payment date, *p. 186* stock dividend, *p. 186*
LG 6 Describe various types of shares, including foreign shares, and note how shares can be used as investment vehicles. Depending on their needs and preferences, investors can choose between blue chips, income shares, growth shares, tech shares, speculative issues, cyclicals, defensive shares, mid-cap shares, small-cap shares and initial public offerings. Investors can also buy shares of foreign companies. Generally, shares can be used as a storehouse of value, as a way to accumulate capital, or as a source of income. Investors can follow different investment strategies (buy-and-hold, current income, quality long-term growth, aggressive share management, and speculation and short-term trading) to achieve these objectives.	blue-chip shares, *p. 190* cyclical shares, *p. 192* defensive shares, *p. 192* growth shares, *p. 191* income (value) shares, *p. 190* large-cap shares, *p. 192* mid-cap shares, *p. 192* small-cap shares, *p. 193* speculative shares, *p. 191* tech shares, *p. 191*

Discussion Questions

LG 1 **Q6.1** Look at the record of annual share returns in Table 6.1 (page 176), particularly the return performance during the 1980s, 1990s and 2000–2010.

a. How would you compare the returns during the 1980s with those produced in the 1990s? Is there anything that stands out about this market? How does it compare with the market that existed from early 2000 through 2010?

b. Considering the average annual returns that have been generated over holding periods of five years or more, what rate of return do you feel is typical for the sharemarket in general? Is it unreasonable to expect this kind of return, on average, in the future? Explain.

LG 2 **Q6.2** Given the information in the quote in Figure 6.2 (page 182), answer the following questions for Stockland.

a. On what day did the trading activity occur?

b. At what price did the share sell at the end of that day?

c. What is the company's price/earnings ratio? What does that indicate?

d. What was the dividend yield?

e. What are the highest and lowest prices at which the share traded during the latest 52-week period?

f. How many shares were traded on the day quoted?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

g. How much, if any, of a change in price took place between the day quoted and the immediately preceding day? At what price did the share close on the immediately preceding day?

LG4 **Q6.3** Listed below are three pairs of shares. Look at each pair and select the security you would like to own, given that you want to *select the one that's worth more money*. Then, *after* you make all three of your selections, use the *Australian Financial Review* or some other source to find the latest market value of the two securities in each pair.

a. 150 shares of David Jones (DJs) or 50 shares of Westpac (WBC)
b. 100 shares of Qantas (QAN) or 100 shares of Seven Network (SEV)
c. 50 shares of Amcor (AMC) or 150 shares of Telstra (TLS)

How many times did you pick the one that was worth more money? Did the price of any of these shares surprise you? If so, which one(s)? Does the price of a share represent its value? Explain.

LG6 **Q6.4** Assume that a wealthy individual comes to you looking for some investment advice. She is in her early forties and has $250 000 to put into shares. She wants to build up as much capital as she can over a 15-year period and is willing to tolerate a 'fair amount' of risk.

a. What types of shares do you think would be most suitable for this investor? Come up with at least three different types of shares, and briefly explain the rationale for each.
b. Would your recommendations change if you were dealing with a smaller amount of money—say, $50 000? What if the investor were more risk-averse? Explain.

LG6 **Q6.5** Identify and briefly describe the three sources of return to Australian investors in foreign shares. How important are currency exchange rates? With regard to currency exchange rates, when is the best time to be in foreign securities?

Listed below are exchange rates (for the beginning and end of a hypothetical one-year investment horizon) for three currencies: the British pound (B£), New Zealand dollar (NZ$) and Mexican peso (Mp).

	Currency Exchange Rates at	
Currency	Beginning of Investment Horizon	End of One-Year Investment Horizon
British pound (B£)	1.55 A$ per B£	1.75 A$ per B£
New Zealand dollar (NZ$)	1.35 NZ$ per A$	1.25 NZ$ per A.$
Mexican peso (Mp)	0.10 A$ per Mp	0.08 A$ per Mp

From the perspective of an Australian investor holding a foreign (British, New Zealand or Mexican) share, which of the above changes in currency exchange rates would have a positive effect on returns (in Australian dollars)? Which would have a negative effect?

LG6 **Q6.6** Briefly define each of the following types of investment programs and note the kinds of share (e.g. blue chips, speculative shares) that would best fit with each.

a. A buy-and-hold strategy
b. A high-income portfolio
c. Long-term total return
d. Aggressive share management
e. Value investing
f. Sector rotation

Problems

All problems are available on **www.pearson.com.au/myfinancelab**

LG3 **P6.1** An investor owns some shares in General Refrigeration & Cooling. The share recently underwent a 5-for-2 share split. If the share was trading at $50 just before the split, how much is each share most likely selling for after the split? If the investor owned 200 shares before the split, how many shares would she own afterwards?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG3 **P6.2** An investor deposits $20 000 into a new brokerage account. The investor buys 1000 Tipco shares for $19 per share. Two weeks later, the investor sells the Tipco shares for $20 per share. When the investor receives his brokerage account statement, he sees that there is a balance of $20 900 in his account:

Item	Number	Price per Share	Total Transaction	Account Balance
1. Deposit			$20 000	$20 000
2. Tipco purchase	1000 shares	$19	($19 000)	$20 000
3. Tipco sale	1000 shares	$20	$20 000	$21 000
4.				
5. Balance				$20 900

What belongs in item 4 on this statement?

LG4 **P6.3** Kracked Pottery Company has total assets of $2.5 million, total short- and long-term debt of $1.8 million, and $200 000 worth of 8% preference shares outstanding. What is the company's total book value? What would its book value per share be if the company had 50 000 ordinary shares outstanding?

LG4 **P6.4** Lots ov' Profit Ltd, is trading at $25 per share. There are 250 million shares outstanding. What is the market capitalisation of this company?

LG5 **P6.5** The MedTech Company recently reported net profit after tax of $15.8 million. It has 2.5 million shares outstanding and pays preference dividends of $1 million per year.

a. Compute the company's earnings per share (EPS).
b. Assuming that the share currently trades at $60, determine what the company's dividend yield would be if it paid $2 per share to ordinary shareholders.
c. What would the company's dividend payout ratio be if it paid $2 per share in dividends?

LG5 **P6.6** On 1 January 2010, an investor bought 200 shares of Gottahavit Pty Ltd, for $50 per share. On 3 January 2011, the investor sold the shares for $55 per share. The share paid a quarterly dividend of $0.25 per share. How much (in $) did the investor earn on this investment, and, assuming the investor is in the 33% tax bracket, how much will she pay in income taxes on this transaction?

LG4 LG5 **P6.7** Consider the following information about Truly Good Coffee Company.

Total assets	$240 million
Total debt	$115 million
Preference shares	$25 million
Ordinary shareholders' equity	$100 million
Net profits after tax	$22.5 million
Number of preference shares outstanding	1 million shares
Number of ordinary shares outstanding	10 million shares
Preference dividends paid	$2/share
Ordinary dividends paid	$0.75/share
Market price of the preference shares	$30.75/share
Market price of the ordinary shares	$25.00/share

Use the information above to find the following.

a. The company's book value
b. Its book value per share
c. Its earnings per share (EPS)
d. The dividend payout ratio
e. The dividend yield on the ordinary shares
f. The dividend yield on the preference shares

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG5 **P6.8** East Coast Utilities is currently trading at $28 per share. The company pays a quarterly dividend of $0.28 per share. What is the dividend yield?

LG5 **P6.9** West Coast Utilities had a net profit of $900 million. It has 900 million shares outstanding and paid annual dividends of $0.90 per share. What is the dividend payout ratio?

LG5 **P6.10** Wilfred Nadeau owns 200 shares of Consolidated Glue. The company's board of directors recently declared a cash dividend of 50 cents a share payable on 18 April (a Wednesday) to shareholders of record on 22 March (a Thursday).

a. How much in dividends, if any, will Wilfred receive if he *sells* his shares on 20 March?

b. Assume Wilfred decides to hold onto the shares rather than sell them. If he belongs to the company's dividend reinvestment plan, how many new shares will he receive if shares are currently trading at $40 and the plan offers a 5% discount on the share price? (Assume that all of Wilfred's dividends are diverted to the plan.) Will Wilfred have to pay any taxes on these dividends, given that he is taking them in shares rather than cash?

LG5 **P6.11** Southern Cities Trucking Company has the following five-year record of earnings per share.

Year	EPS
2006	$1.40
2007	2.10
2008	1.00
2009	3.25
2010	0.80

Which of the following procedures would produce the greater amount of dividends to shareholders over this five-year period?

a. Paying out dividends at a fixed ratio of 40% of EPS

b. Paying out dividends at a fixed rate of $1 per share

LG4 LG5 **P6.12** Using the resources available at your campus or public library, or on the Internet, select any three shares you like and determine the latest book value per share, earnings per share, dividend payout ratio and dividend yield for each. (Show all your calculations.)

LG4 LG5 **P6.13** In January 2006, an investor purchased 800 shares of Engulf & Devour, a rapidly growing high-tech conglomerate. Over the five-year period from 2006 through 2010, the share turned in the following dividend and share price performance.

Year	Share Price at Beginning of Year	Dividends Paid During Year	Share Price at End of Year
2006	$42.50*	$0.82	$54.00
2007	54.00	1.28	74.25
2008	74.25	1.64	81.00
2009	81.00	1.91	91.25
2010	91.25	2.30	128.75

* Investor purchased shares in 2006 at this price.

On the basis of this information, find the annual holding period returns for 2006 through 2010. (*Hint:* See Chapter 4 for the HPR formula.)

LG6 **P6.14** George Robbins considers himself to be an aggressive investor. At the present time, he's thinking about investing in some foreign securities. In particular, he's looking at two shares: (1) Bayer AG, the big German chemical and health-care company, and (2) Swisscom AG, the Swiss telecommunications company.

Bayer AG, which trades on the Frankfurt Exchange, is currently priced at 53.25 euros (A) per share. It pays annual dividends of A1.50 per share. Robbins expects the shares to climb to

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

A 60.00 per share over the next 12 months. The current exchange rate is A 0.9025/A$, but that's expected to rise to A 1.015/A$. The other company, Swisscom, trades on the Zurich Exchange and is currently priced at 71.5 Swiss francs (Sf) per share. The share pays annual dividends of Sf 1.5 per share. Its share price is expected to go up to Sf 76.0 within a year. At current exchange rates, 1 Sf is worth A$0.75, but that's expected to go to A$0.85 by the end of the one-year holding period.

a. *Ignoring the currency effect*, which of the two shares promises the higher total return (in its local currency)? Based on this information, which of the two shares looks like the better investment?

b. Which of the two shares has the better total return *in Australian dollars*? Did currency exchange rates affect their returns in any way? Do you still want to stick with the same share you selected in part **a**? Explain.

LG 6 **P6.15** Bruce buys $25 000 of UH-OH Company shares. Unfortunately, a major newspaper reveals the very next day that the company is being investigated for accounting fraud, and the share price falls by 50%. What is the percentage increase now required for Bruce to get back to $25 000 of value?

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 6.1 SARA DECIDES TO TAKE THE PLUNGE

LG 1 LG 6 Sara Thomas is a child psychologist who has built up a thriving practice in her home town of Adelaide. Her practice has been so lucrative, in fact, that over the past several years she has been able to accumulate a substantial sum of money. She has worked long and hard to be successful, but she never imagined anything like this. Fortunately, success has not spoiled Sara. Still single, she keeps to her old circle of friends. One of her closest friends is Terry Jenkins, who happens to be a stockbroker. Sara sees a lot of Terry, who has acted as her financial adviser.

Not long ago, Sara attended a seminar on investing in the sharemarket. Since then she has been doing some reading about the market, and she has concluded that keeping all of her money in low-yielding savings accounts really doesn't make any sense. As a result, Sara has decided to move part of her money to shares. One evening, Sara told Terry about her decision and explained that she had found several shares that she thought looked 'sort of interesting'. She described them as follows:

- *Pacific Swim Suit Company.* This highly speculative share pays no dividends. Although the earnings of PSS have been a bit erratic, Sara feels that its growth prospects have never been brighter—'what with more people than ever going to the beaches the way they are these days', she says.
- *Town and Country Computer.* This is a long-established computer company that pays a modest dividend yield (of about 2.5%). It is considered a quality growth company. From one of the share reports she read, Sara understands that it offers excellent long-term growth and capital gains potential.
- *Southwestern Public Utility Company.* This value share pays a nice dividend yield of around 5%. Although it is a solid company, it has limited growth prospects because of its location.
- *International Gold Mines Ltd.* This share has performed quite well in the past, especially when inflation has become a problem. Sara feels that if it can do so well in inflationary times, it will do even better in a strong economy. Unfortunately, the share has experienced wide price swings in the past and pays almost no dividends.

QUESTIONS

1. What do you think of the idea of Sara keeping 'substantial sums' of money in savings accounts? Would shares make better investments than savings accounts? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

2. What is your opinion of the four shares Sara has described? Do you think they are suitable for her investment needs? Explain.
3. What kind of share investment program would you recommend for Sara? What investment objectives do you think she should set for herself, and how can shares help her to achieve her goals?

Case Problem 6.2 DAVE STARTS LOOKING FOR YIELD

LG5 LG6 Dave Peterson is a commercial artist who makes a good living by doing freelance work—mostly layouts and illustrations for local advertising agencies and major institutional clients (such as large department stores). Dave has been investing in the sharemarket for some time, buying mostly high-quality growth shares. He has been seeking long-term growth and capital appreciation and feels that with the limited time he has to devote to his security holdings, high-quality issues are his best bet. He has become a bit perplexed lately with the market, disturbed that some of his growth shares aren't doing even as well as many good-grade value shares. He therefore decides to have a chat with his stockbroker, Alan Fried.

During the course of their conversation, it becomes clear that both Alan and Dave are thinking along the same lines. Alan points out that dividend yields on value shares are indeed way up and that, because of the state of the economy, the outlook for growth shares isn't particularly bright. He suggests that Dave seriously consider putting some of his money into value shares to capture the high dividend yields that are available. After all, as Alan says, 'The bottom line isn't so much where the payoff comes from as how much it amounts to!' They then talk about a high-yield public utility company, Hydro-Electric Light and Power. Alan digs up some forecast information about Hydro-Electric and presents it to Dave for his consideration:

Year	Expected EPS	Expected Dividend Payout Ratio
2010	$3.25	40%
2011	3.40	40
2012	3.90	45
2013	4.40	45
2014	5.00	45

The company currently trades at $60 per share, and Alan thinks that within five years it should be trading at a level of $75–$80. Dave realises that in order to buy the Hydro-Electric shares, he will have to sell his holdings of CapCo Industries—a highly regarded growth company that Dave is disenchanted with because of recent sub-standard performance.

QUESTIONS

1. How would you describe Dave's present investment program? How do you think it fits him and his investment objectives?
2. Consider the Hydro-Electric shares.
   a. Determine the amount of annual dividends Hydro-Electric can be expected to pay over the years 2010–2014.
   b. Calculate the total dollar return that Dave will make from Hydro-Electric if he invests $6000 in the shares and all the dividend and price expectations are realised.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

c. If Dave participates in the company's dividend reinvestment plan, how many shares will he have by the end of 2014, and what will they be worth if the share trades at $80 on 31 December 2014? Assume that the share can be purchased through the dividend reinvestment plan at a net price of $50 a share in 2010, $55 in 2011, $60 in 2012, $65 in 2013 and $70 in 2014. Use fractional shares, to two decimals, in your calculations. Also, assume that Dave starts with 100 shares and all dividend expectations are realised.

3. Would Dave be going to a different investment strategy if he decided to buy shares in Hydro-Electric? If the switch is made, how would you describe his new investment program? What do you think of this new approach, and is it likely to lead to more trading on Dave's behalf? If so, can you reconcile that with the limited amount of time he has to devote to his portfolio?

Excel with Spreadsheets

Below is information for Stockland Corporation Ltd. Prepare a similar spreadsheet for a competitor for Stockland (in terms of industry or size) or using more up-to-date information, if available to you. Ensure that you include the current share price, trading volume data, beta, market capitalisation and per share ratios. Compare Stockland 2010 to the information that you find, and determine the strengths and weaknesses of both shares.

Stock Quote

Stockland Corporation Ltd

Date of Report: 02/05/2011 **GICS Industry Group:** Real Estate

Share price information

Current Price	$3.74	**Day's Low**	$3.71
Change	-1.06%	**Beta**	$1.27
Previous Close	$3.78	**52 week high**	$4.15
Volume	4267289	**52 week low**	$3.44
Day's High	$3.80		

Key Ratios and Statistics

Market Capitalisation	
Market Capitalisation	$912,557,322.00
Share Outstanding	2383036717
Valuation Ratios	
Price/Earnings	12.9
Price/Sales	4.37254
Price/Book	1.03842
Profitability Ratios (%)	
Gross Margin	40.96458
Operating Margin	24.25
Net Profit Margin	23.22
Financial Strength	
Quick Ratio	0.69
Current Ratio	1.23
LT Debt/Equity	29.72
Total Debt/Equity	32.65

Per Share Data ($ AUD)	
Earnings	0.19941
Sales	0.85853
Book Value	3.64014
Cash Flow	0.20491
Cash	0.48588
Management Effectiveness (%)	
Return on Equity	5.51228
Return on Assets	3.29
Dividend Information	
Dividend Yield	6.10%
Dividend Per Share	21.8c

(*Source:* Data taken from the *Stockland Financial Report* 2010 and various online sources including <http://markets.smh.com.au/apps/qt/index.ac>; <http://af.reuters.com/finance/quotes/quote?symbol=SGP.AX>; <finance.nonemsn.com.au/news-and-markets/company/financials>; <ASX.com.au/asx/research/companyInfo>; <www.traderdealer.com.au/Fundamentals/SGP and <google.com/finance>, accessed May 3, 2011.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The text discussed dividends as a source of share returns, the features of dividends and important dividend-related dates. It also covered how to purchase shares through dividend reinvestment plans and how to invest in foreign companies. When many people think of investments, they think shares. The allure of shares is enticing and exciting. There are several ways of referring to the value of shares, such as market value, book value and par value. You need to understand these features before undertaking any investment in shares. You also need to understand dividends as a source of share return. The Web provides easy and quick access to information sources on shares. Without the Web, many investors would have to pay for this information or invest valuable time in seeking out hard-copy sources. Some useful websites are given below. These sites, as well as a number of similar sites offered by other media and stockbroking organisations, provide up-to-the-minute information on equity markets and individual companies' performances, announcements and prices.

WEBSITE	URL
Australian Financial Review	www.afr.com.au/markets
Australian Securities Exchange	www.asx.com.au
Trading Room	www.tradingroom.com.au

Visit **www.pearson.com.au/myfinancelab** for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER

7 Analysing Shares

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Discuss the security analysis process, including its goals and functions.
- LG2 Understand the purpose and contributions of economic analysis.
- LG3 Describe industry analysis and note how it is used.
- LG4 Demonstrate a basic appreciation of fundamental analysis and why it is used.
- LG5 Calculate a variety of financial ratios and describe how financial statement analysis is used to gauge the financial vitality of a company.
- LG6 Use various financial measures to assess a company's performance, and explain how the insights derived form the basic input for the valuation process.

Getting Rich from Getting Old

Australia's population is getting on. The government's latest inter-generational report says that in 40 years' time, there will be only 2.7 people of working age for each Australian aged 65 or over (compared with five to one today, and 7.5 to one in 1970). By 2050 the proportion of GDP spent on health services and aged care will double, which will be hard on the public purse.

In turn, however, companies operating in the health and aged care sectors stand to benefit from the long-term changes. The winners will include those who develop and manage retirement villages, health-care companies including medical services, diagnostic services and drug developers, and funeral services providers.

As part of their day-to-day activities of making investment recommendations, security analysts have to consider a broad range of macroeconomic trends, like this one, as well as industry factors, and specific attributes of individual firms. This chapter introduces some of the techniques and procedures you can use to evaluate the future of the economy, of industries and of specific companies.

(*Source: Smart Investor*, March 2010, p. 9.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Security Analysis

LG 7

The obvious motivation for investing in shares is to watch your money grow. Consider, for example, the case of Cochlear Limited, the Australian manufacturer and marketer of cochlear implants, which are used to stimulate impaired hearing. If you had purchased $1000 worth of Cochlear shares when the company had its initial public offering in 1996, 14 years later, in 2010, those shares would have a market value of over $22 000. That works out to an average annual return of almost 25%, as compared to the 10% annual return generated over the same period by the ASX 200. Unfortunately for every story of great success in the market, there are dozens more that don't end so well.

More often than not, most of those investment flops can be traced to bad timing, greed, poor planning or failure to use common sense in making investment decisions. Although these chapters on share investments cannot offer magic keys to sudden wealth, they do provide sound principles for formulating a successful long-range investment program. The techniques described are proven methods that have been used by millions of successful investors.

Principles of Security Analysis

security analysis
the process of gathering and organising information and then using it to determine the intrinsic value of an ordinary share.

intrinsic value
the underlying or inherent value of a share, as determined through fundamental analysis.

Security analysis consists of gathering information, organising it into a logical framework, and then using the information to determine the intrinsic value of an ordinary share. That is, given a rate of return that's compatible with the amount of risk involved in a proposed transaction, **intrinsic value** provides a measure of the underlying worth of a share. It provides a standard for helping you judge whether a particular share is undervalued, fairly priced or overvalued. The entire concept of share valuation, in fact, is based on the belief that all securities possess an intrinsic value that their market value will approach over time.

In investments, the question of value centres on return. That is, a satisfactory investment candidate is one *that offers a level of expected return proportionate to the amount of risk involved*. As a result, not only must an investment candidate be profitable, but it also must be *sufficiently* profitable—in the sense that you'd expect it to generate a return that's high enough to offset the perceived exposure to risk.

The problem, of course, is finding the right securities. One approach is to buy whatever strikes your fancy. A more rational approach is to use security analysis to look for promising candidates. Security analysis addresses the question of what to buy by determining what a share *ought to be worth*. Presumably, an investor will buy a share *only if its prevailing market price does not exceed its worth*—its intrinsic value. Ultimately, intrinsic value depends on several factors:

1. Estimates of the share's future cash flows (e.g. the amount of dividends you expect to receive over the holding period and the estimated price of the share at the time of sale).
2. The discount rate used to translate those future cash flows into a present value.
3. The risk associated with future performance, which helps define the appropriate discount rate.

The Top-Down Approach to Security Analysis Traditional security analysis usually takes a 'top-down' approach: it begins with economic analysis, moves to industry analysis, and then to fundamental analysis of a specific company. *Economic analysis* assesses the general state of the economy and its potential effects on businesses.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Industry analysis deals with the industry within which a particular company operates. It looks at the overall outlook for that industry and at how companies compete against each other in that industry. *Fundamental analysis* looks at the financial condition and operating results—the 'fundamentals'—of a specific company. The fundamentals include the company's investment decisions, the liquidity of its assets, its use of debt, its profit margins and earnings growth. Once an analyst, or an investor, has synthesised all of the information from the economic, industry, and fundamental analysis, the analyst uses that information to estimate the intrinsic value of a company's share and then compares that intrinsic value to the actual market value of the share. When the intrinsic value is greater than the market price, an analyst will recommend that clients purchase the share, and when the opposite is true, the analyst may issue a recommendation to sell.

Fundamental analysis is closely linked to the notion of intrinsic value, because it *provides the basis for projecting a share's future cash flows*. A key part of this analytical process is *company analysis,* which takes a close look at the actual financial performance of the company. Such analysis is not meant simply to provide interesting titbits of information about how the company has performed in the past. Rather, company analysis is done to *help investors formulate expectations about the future performance of the company and its share*. Make no mistake about it: in investments, it's the future that matters. But to understand the future prospects of the firm, you should have a good handle on the company's current condition and its ability to produce earnings. That's what company analysis does: it helps investors predict the future by looking at the past and determining how well the company is situated to meet the challenges that lie ahead.

Who Needs Security Analysis in an Efficient Market?

The concept of security analysis in general, and fundamental analysis in particular, is based on the assumption that at least some investors are capable of identifying shares with intrinsic values that differ from their market values. Fundamental analysis operates on the broad premise that some securities may be mispriced in the marketplace at least some of the time. If securities are occasionally mispriced, and if investors can identify mispriced securities, then fundamental analysis may be a worthwhile and profitable pursuit.

To many, those two premises seem reasonable. However, there are others who do not accept the assumptions of fundamental analysis. These so-called *efficient market* advocates believe that the market is so efficient in processing new information that securities trade very close to or at their correct values at all times and that even when securities are mispriced, it is nearly impossible for investors to determine which shares are overvalued and which are undervalued. Thus, they argue, it is virtually impossible to consistently outperform the market. In its strongest form, the *efficient market hypothesis* asserts the following:

1. Securities are rarely, if ever, substantially mispriced in the marketplace.
2. No security analysis, however detailed, is capable of identifying mispriced securities with a frequency greater than that which might be expected by random chance alone.

Is the efficient market hypothesis correct? Is there a place for fundamental analysis in modern investment theory? Interestingly, most financial theorists and practitioners would answer 'yes' to both questions.

The solution to this apparent paradox is quite simple. Fundamental analysis is of value in the selection of alternative investments for two important reasons. First,

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

financial markets are as efficient as they are because a large number of people and financial institutions invest a great deal of time and money analysing the fundamentals of most widely held investments. In other words, markets tend to be efficient and securities tend to trade at or near their intrinsic values simply because a great many people have done the research to determine what their intrinsic values should be.

Second, although the financial markets are generally quite efficient, they are by no means *perfectly* efficient. Pricing errors are inevitable. Those individuals who have conducted the most thorough studies of the fundamentals of a given security are the most likely to profit when errors do occur. We will study the ideas and implications of efficient markets in some detail in Chapter 9. For now, however, we will assume that traditional security analysis is useful in identifying attractive equity investments.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

7.1 Identify the three major parts of security analysis and explain why security analysis is important to the share selection process.

7.2 What is *intrinsic value*? How does it fit into the security analysis process?

7.3 How would you describe a satisfactory investment vehicle? How does security analysis help in identifying investment candidates?

7.4 Would there be any need for security analysis if we operated in an efficient market environment? Explain.

Economic Analysis

LG 2

Share prices are heavily influenced by the state of the economy and by economic events. As a rule, share prices tend to move up when the economy is strong, and they retreat when the economy starts to weaken. It's not a perfect relationship, but it is a fairly powerful one.

The reason why the economy is so important to the market is simple: the overall performance of the economy has a significant bearing on the performance and profitability of most companies. As companies' fortunes change with economic conditions, so do the prices of their shares. Of course, not all shares are affected in the same way or to the same extent. Some sectors of the economy, like food retailing, may be only mildly affected by the economy. Others, like the construction and motor vehicle industries, are often hard hit when times get rough.

economic analysis
a study of general economic conditions that is used in the valuation of shares.

Economic analysis consists of a general study of the prevailing economic environment—often on both a global and domestic basis (although here we'll concentrate, for the most part, on the domestic economy). Such analysis is meant to help investors gain insight into the underlying condition of the economy and the potential impact it might have on the behaviour of share prices. It can go so far as to include a detailed examination of each sector of the economy, or it may be done on a very informal basis. However, from a security analysis perspective, its purpose is always the same: to establish a sound foundation for the valuation of shares.

Economic Analysis and the Business Cycle

Economic analysis is the first step in the top-down approach. It sets the tone for the entire security analysis process. Thus, if the economic future looks bleak, you can

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

business cycle
an indication of the current state of the economy, reflecting changes in total economic activity over time.

probably expect most share returns to be equally dismal. If the economy looks strong, shares should do well. The behaviour of the economy is captured in the **business cycle**, which reflects changes in total economic activity over time.

Two widely followed measures of the business cycle are gross domestic product and industrial production. *Gross domestic product* (GDP) is the market value of all goods and services produced in a country over a given period. *Industrial production* is an indicator of the output produced by industrial companies. Normally, GDP and the index of industrial production move up and down with the business cycle.

Key Economic Factors

The state of the economy is affected by a wide range of factors, from the consumption, saving and investment decisions made independently by millions of households to major government policy decisions. Some of the most important factors that analysts examine when conducting a broad economic analysis include:

Government fiscal policy
- Taxes
- Government spending
- Debt management

Monetary policy
- Money supply
- Interest rates

Other factors
- Inflation
- Consumer spending
- Business investments
- Foreign trade and foreign exchange rates

Government fiscal policies can influence how fast the economy grows through a variety of channels. When the government increases spending or reduces taxes, it is pursuing an expansionary fiscal policy. Similarly, monetary policy is said to be expansive when interest rates are relatively low and money is readily available. An expansive economy also depends on a generous level of spending by consumers and business concerns. These same variables moving in a reverse direction can have a contractionary (recessionary) impact on the economy, as, for example, when taxes and interest rates increase or when spending by consumers and businesses falls off.

The impact of these major forces filters through the system and affects several key dimensions of the economy. The most important of these are industrial production, corporate profits, retail sales, personal income, the unemployment rate and inflation. For example, a strong economy exists when industrial production, corporate profits, retail sales and personal income are moving up and unemployment is down.

Thus, when conducting an economic analysis, you should keep an eye on fiscal and monetary policies, consumer and business spending and foreign trade for the potential impact they might have on the economy. At the same time, you must stay abreast of the level of industrial production, corporate profits, retail sales, personal income, unemployment and inflation in order to assess the current state of the business cycle.

To help you keep track of the economy, Table 7.1 provides a brief description of some key economic measures. These economic statistics are compiled by various government agencies and are widely reported in the financial media. Take the time to

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 7.1 Keeping Track of the Economy

To sort out the confusing array of figures that flow regularly from the Australian Bureau of Statistics (ABS), and to help you keep track of what's happening in the economy, here are some of the most important economic measures and reports to watch.

- **Gross domestic product.** This broadest measure of the economy's performance is issued every three months by the ABS. It is an estimate of the total dollar value of all the goods and services produced in Australia. Movements in many areas of the economy are closely related to changes in GDP, so it is a good analytic tool. In particular, watch the annual rate of growth or decline in 'real' or 'constant' dollars. This number eliminates the effects of inflation and thus measures the actual volume of production. Remember, though, that frequent revisions of GDP figures sometimes change the picture of the economy.
- **International balance of trade.** The monthly balance on goods and services, and the quarterly balance on current account and the net international investment position, show Australia's international trade position from trading goods and services and from borrowing and lending. A trade imbalance can reflect on the competitiveness of Australian companies compared to our trading partners, and may signal changes in future production levels. 'Capital account' changes may be indicators of changes in monetary conditions in Australia—for example, interest rates.
- **Average weekly earnings.** A quarterly report from the ABS which shows the full-time before-tax income received by adults in the form of wages and salaries. As a measure of individuals' spending power, the report helps to explain trends in consumer buying habits, a major part of total GDP. When average weekly earnings rise, it often means that people increase their buying. But note a big loophole: excluded are the millions of dollars that change hands in the so-called cash economy—cash transactions that are never reported to tax or other officials.
- **Retail sales.** The ABS's monthly estimate of total sales at the retail level includes everything from cars to bags of groceries. Based on a sample of retail establishments, the figure gives a rough clue to consumer attitudes. When combined with quarterly reports on new capital expenditure, it can also indicate future conditions: a long slowdown in sales and reduced capital expenditure can lead to cuts in production.
- **Consumer prices.** Issued quarterly by the ABS, this index shows changes in prices for a fixed market basket of goods and services and is watched as a measure of inflation by governments, employee groups and trade unions.
- **Producer prices.** Two quarterly indicators show price changes of goods at two stages of production: inputs, or materials used; and outputs, or articles produced. An upward surge may mean higher consumer prices later. The indices, however, can miss discounts and may exaggerate rising price trends. Watch, particularly, for changes in the prices of finished goods. These don't fluctuate as widely as the prices of crude materials and thus are a better measure of inflationary pressures.
- **Employment.** The percentage of the workforce that is involuntarily out of work is a broad indicator of economic health. Other useful indicators on employment are the participation rate and the number of job vacancies. A decreasing number of jobs is a sign that firms are cutting production.
- **Housing approvals.** A pickup in the pace of housing approvals usually follows an easing of credit conditions—the availability and cost of money—and is an early indicator of improvement in economic health. This monthly report from the ABS includes dwelling unit approvals and building approvals.

carefully read about the various economic measures and reports cited in Table 7.1. When you understand the behaviour of these statistics, you can make your own educated guess as to the current state of the economy and where it's headed.

Developing an Economic Outlook

Conducting an economic analysis involves studying fiscal and monetary policies, inflationary expectations, consumer and business spending, and the state of the business cycle. Often, investors do this on a fairly informal basis. As they form their economic judgments, many rely on one or more of the popular published sources (e.g. the *Australian Financial Review, Business Review Weekly*) as well as on periodic reports from major brokerage houses. These sources provide a convenient summary of economic activity and give investors a general feel for the condition of the economy.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Once you have developed a general economic outlook, you can use the information in one of two ways. One approach is to construct an economic outlook and then consider where it leads in terms of possible areas for further analysis. For example, suppose you uncover information that strongly suggests that the outlook for business spending is very positive. On the basis of such an analysis, you might want to look more closely at capital goods producers, such as office equipment manufacturers. Similarly, if you feel that because of sweeping changes in world politics, crude oil and other fuel sources are likely to be in high demand for several years, you might want to invest in companies in the fuel industries internationally.

A second way to use information about the economy is to consider specific industries or companies and ask, 'How will they be affected by expected developments in the economy?' Take, for example, an investor with an interest in *business equipment shares*. This industry category includes companies involved in the production of everything from business machines and electronic systems to work lockers and high-fashion office furnishings. These shares are highly susceptible to changing economic conditions. That's because when the economy starts slowing down, companies can put off purchases of durable equipment and fixtures. Especially important to this industry, therefore, is the outlook for corporate profits and business investments. As long as these economic factors look good, the prospects for business equipment shares should be positive.

Assessing the Potential Impact on Share Prices In this instance, our imaginary investor would first want to assess the current state of the business cycle. Using that insight, he could then formulate some expectations about the future of the economy and the potential impact it holds for the share market in general and business equipment shares in particular. Table 7.2 shows how some of the more important economic variables can affect the behaviour of the share market.

To see how this might be done, let's assume that the economy has just gone through a year-long recession and is now in the recovery stage of the business cycle. Employment is starting to pick up. Inflation and interest rates are low. Both GDP and industrial production have experienced sharp increases in the past six months. Also, Parliament is putting the finishing touches on a major piece of legislation that will lead to reduced taxes. More importantly, although the economy is now in the early stages of a recovery, things are expected to get even better in the future. The economy is definitely starting to build up steam, and all indications are that both corporate profits and business spending should undergo a sharp increase. All of these predictions should be good news for the producers of business equipment and office furnishings, as a good deal of their sales and an even larger portion of their profits depend on the level of corporate profits and business spending. In short, our investor sees an economy that's in good shape and set to become even stronger—the consequences of which are favourable not only for the market but for business equipment shares as well.

Note that these conclusions could have been reached by relying on sources such as *Australian Financial Review* or *Business Review Weekly*. In fact, about the only 'special thing' this investor would have to do is pay careful attention to those economic forces that are particularly important to the business equipment industry (e.g. corporate profits and capital spending). The economic portion of the analysis has set the stage for further evaluation by indicating the type of economic environment to expect in the near future. The next step is to narrow the focus a bit and conduct the industry phase of the analysis.

The Market as a Leading Indicator Before we continue our analysis, it is vital to clarify the relationship that normally exists between the sharemarket and the economy. As

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 7.2 Economic Variables and the Sharemarket

Economic Variable	Potential Effect on the Sharemarket
Real growth in GDP	Positive impact—it's good for the market.
Industrial production	Continued increases are a sign of strength, which is good for the market.
Inflation	Detrimental to share prices. Higher inflation leads to higher interest rates and lower price/earnings multiples, and generally makes equity securities less attractive.
Corporate profits	Strong corporate earnings are good for the market.
Unemployment	A downer—an increase in unemployment means business is starting to slow down.
Budget surplus or deficit	Budget surpluses are good for interest rates and share prices. Budget deficits, in contrast, may be a positive sign for a depressed economy but can lead to inflation in a stronger economic environment and therefore have a negative impact.
Weak dollar	Often the result of big trade imbalances, a weak dollar has a negative effect on the market. It makes our markets less attractive to foreign investors. However, it also makes our products more affordable in overseas markets and therefore can have a positive impact on our economy.
Interest rates	Another downer—rising rates tend to have a negative effect on the market for shares.
Money supply	Moderate growth can have a positive impact on the economy and the market. Rapid growth, however, is inflationary and therefore detrimental to the sharemarket.

we just saw, investors use the economic outlook to get a handle on the market and to identify developing industry sectors. Yet it is important to note that changes in share prices normally occur *before* the actual forecasted changes become apparent in the economy. Indeed, the current trend of share prices is frequently used to help *predict* the course of the economy itself.

The apparent conflict here can be resolved somewhat by noting that because of this relationship, it is even more important to derive a reliable economic outlook and to be sensitive to underlying economic changes that may mean the current outlook is becoming dated. Investors in the sharemarket tend to look into the future to justify the purchase or sale of shares. If their perception of the future is changing, share prices are also likely to be changing. Therefore, watching the course of share prices as well as the course of the general economy can make for more accurate investment forecasting.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

7.5 Describe the general concept of *economic analysis*. Is this type of analysis necessary, and can it really help the individual investor make a decision about a share? Explain.

7.6 Why is the business cycle so important to economic analysis? Does the business cycle have any bearing on the sharemarket?

7.7 Briefly describe each of the following:

a. Gross domestic product
b. Retail Sales
c. Housing approvals
d. Producer prices

7.8 What effect, if any, does inflation have on shares?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Industry Analysis

LG 3

Have you ever thought about buying shares in a bank or a media company? How about diversifieds or mining shares? Looking at securities in terms of industry groupings is widely used by both individual and institutional investors. This approach makes a lot of sense because share prices are influenced, to one degree or another, by industry conditions. Indeed, various industry forces, including the level of demand within an industry, can have a real impact on individual companies.

Industry analysis, in effect, sets the stage for a *more thorough analysis of individual companies and securities*. Clearly, if the outlook is good for an industry, then the prospects are likely to be favourable for many of the companies that make up that industry. In addition, industry analysis also helps the investor *assess the riskiness of a company* and therefore *define the appropriate risk-adjusted rate of return* to use in setting a value on the company's shares. That's true because there are always at least some similarities in the riskiness of the companies that make up an industry, so if you can gain an understanding of the risks inherent in an industry, you'll gain valuable insights about the risks inherent in individual companies and their securities.

Key Issues

industry analysis
a study of industry groupings that looks at the competitive position of a particular industry in relation to others and identifies companies that show particular promise within an industry.

Because all industries do not perform the same, the first step in **industry analysis** is to establish the competitive position of a particular industry *in relation to others*. The next step is to identify companies *within the industry* that hold particular promise. Analysing an industry means looking at such things as its makeup and basic characteristics, the key economic and operating variables that drive industry performance, and the outlook for the industry. You will also want to keep an eye out for specific companies that appear well situated to take advantage of industry conditions. Companies with strong market positions should be favoured over those with less secure positions. Such dominance indicates an ability to maintain pricing leadership and suggests that the firm will be in a position to enjoy economies of scale and low-cost production. Market dominance also enables a company to support a strong research and development effort, thereby helping it secure its leadership position for the future.

Normally, you can gain valuable insight about an industry by seeking answers to the following questions:

1. *What is the nature of the industry?* Is it monopolistic, or are there many competitors? Do a few set the trend for the rest, and if so, who are those few?
2. *To what extent is the industry regulated?* If so, how 'friendly' are the regulatory bodies?
3. *What role, if any, do trade unions play in the industry?* How important are the unions? Are there good labour relations within the industry? When is the next round of negotiations?
4. *How important are technological developments?* Are any new developments taking place? What impact are potential breakthroughs likely to have?
5. *Which economic forces are especially important to the industry?* Is demand for the industry's goods and services related to key economic variables? If so, what is the outlook for those variables? How important is foreign competition to the health of the industry?
6. *What are the important financial and operating considerations?* Is there an adequate supply of labour, material and capital? What are the capital spending plans and needs of the industry?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

growth cycle
a reflection of the amount of business vitality that occurs within an industry (or company) over time.

The Industry Growth Cycle Questions like these can sometimes be answered in terms of an industry's **growth cycle**, which reflects the vitality of the industry over time. In the first stage—*initial development*—investment opportunities are usually not available to most investors. The industry is new and untried, and the risks are very high. The second stage is *rapid expansion,* during which product acceptance is spreading and investors can foresee the industry's future more clearly. At this stage, economic and financial variables have little to do with the industry's overall performance. Investors will be interested in investing almost regardless of the economic climate. This is the phase that is of substantial interest to investors, and a good deal of work is done to find such opportunities.

Unfortunately, most industries do not experience rapid growth for long. Instead, they eventually slip into the next category in the growth cycle, *mature growth,* which is the one most influenced by economic developments. In this stage, expansion comes from growth of the economy. It is a slower source of overall growth than that experienced in stage 2. In stage 3, the long-term nature of the industry becomes apparent. Industries in this category include defensive ones, like food and clothing, and cyclical industries, like motor vehicles and heavy equipment.

The last stage is either *stability* or *decline*. In the decline phase, demand for the industry's products is diminishing, and companies are leaving the industry. Investment opportunities at this stage are almost non-existent, unless you are seeking only dividend income. Certainly, growth-oriented investors will want to stay away from industries at the decline stage of the cycle. Other investors may be able to find some investment opportunities here, especially if the industry is locked in the mature, stable phase. The fact is, however, that very few really good companies ever reach this final stage because they continually bring new products to the market and, in so doing, remain at least in the mature growth phase.

Developing an Industry Outlook

Individual investors can conduct industry analysis themselves. Or, if available, it can be done with the help of published industry reports. Widely used sources of industry information include brokerage house reports and articles in the popular financial media. There also are scores of websites (like Yahoo!7 Finance, Morningstar, Bloomberg, Businessweek and BigCharts) that provide all sorts of useful information about various industries and sub-industries.

Let's resume our example of the imaginary investor who is thinking about buying business equipment shares. Recall from our prior discussion that the economic phase of the analysis suggested a strong economy for the foreseeable future—one in which corporate profits and business spending will be expanding. Now the investor is ready to focus on the industry. A logical starting point is to assess the expected industry response to forecasted economic developments. Demand for the product and industry sales would be especially important. The industry is made up of many large and small competitors, and although it is labour-intensive, trade unions are not an important force. Thus, our investor may want to look closely at the potential effect of these factors on the industry's cost structure. Also worth a look is the work being done in research and development (R&D) and in industrial design within the industry. Our investor would also want to know which companies are coming out with the new products and fresh ideas, because these companies are likely to be the potential industry leaders.

Industry analysis yields an understanding of the nature and operating characteristics of an industry, which can then be used to form judgments about the prospects for industry growth. Let's assume that our investor, by using various types of published

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

and online reports, has examined the key elements of the office equipment industry and has concluded that the industry, *particularly the office furnishings segment*, is well positioned to take advantage of the rapidly improving economy. Many new and exciting products have come out in the last several years, and more are in the R&D stage. Even more compelling is the current emphasis on new products that will contribute to long-term business productivity. Thus, the demand for office furniture and fixtures should increase, and although profit margins may tighten a bit, the level of profits should move up smartly, providing a healthy outlook for growth.

In the course of researching the industry, our imaginary investor has noticed several companies that stand out, but one looks particularly attractive: the imaginary company Universal Office Furnishings. Long regarded as one of the top design companies in the industry, Universal designs, manufactures and sells a full line of high-end office furniture and fixtures (desks, chairs, modular work stations, filing systems, etc.). In addition, the company produces and distributes state-of-the-art computer furniture and a specialised line of institutional furniture for the hospitality, health-care and educational markets. The company was founded over 50 years ago, and its shares (which trades under the symbol UVRS) have been listed on the ASX since the late 1970s. Universal would be considered a *mid-cap share*, with total market capitalisation of around $2 or $3 billion. The company experienced rapid growth in the 1990s, as it expanded its product line. Because of its institutional division, it was not as hard hit as others in the recent bear market. Looking ahead, the general consensus is that the company should benefit nicely from the strong economic environment now in place. Everything about the economy and the industry looks good for the share, so our investor decides to take a closer look at Universal Office Furnishings.

We now turn our attention to fundamental analysis, which will occupy the rest of the chapter.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

7.9 What is *industry analysis,* and why is it important?

7.10 Identify and briefly discuss several aspects of an industry that are important to its behaviour and operating characteristics. Note especially how economic issues fit into industry analysis.

7.11 What are the four stages of an industry's growth cycle? Which of these stages offers the biggest payoff to investors? Which stage is most influenced by forces in the economy?

Fundamental Analysis

LG4 LG5 LG6

fundamental analysis the in-depth study of the financial condition and operating results of a company.

Fundamental analysis is the study of the financial affairs of a business for the purpose of better understanding the company that issued the shares. In this part of the chapter, we will deal with several aspects of fundamental analysis. We will examine the general concept of fundamental analysis and introduce several types of financial statements that provide the raw material for this type of analysis. We will then describe some key financial ratios that are widely used in company analysis and will conclude with an interpretation of those financial ratios. It's important to understand that this represents the more traditional approach to security analysis. This approach is commonly used in any situation where investors rely on financial statements and other databases to at least partially form an investment decision.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Concept

Fundamental analysis rests on the belief that *the value of a share is influenced by the performance of the company that issued the share*. If a company's prospects look strong, the market price of its shares is likely to reflect that and be bid up. However, the value of a security depends not only on the return it promises but also on the amount of its risk exposure. Fundamental analysis captures these dimensions (risk and return) and incorporates them into the valuation process. It begins with a historical analysis of the financial strength of a company: the so-called c*ompany analysis* phase. Using the insights obtained, along with economic and industry analyses, an investor can then formulate expectations about the future growth and profitability of a company.

In the company analysis phase, the investor studies the financial statements of the firm to learn its strengths and weaknesses, identify any underlying trends and developments, evaluate operating efficiencies, and gain a general understanding of the nature and operating characteristics of the company. The following points are of particular interest:

1. The competitive position of the company.
2. Its composition and growth in sales.
3. Profit margins and the dynamics of company earnings.
4. The composition and liquidity of corporate resources (the company's asset mix).
5. The company's capital structure (its financing mix).

This phase is in many respects the most demanding and time-consuming. Because most investors have neither the time nor the inclination to conduct such an extensive study, they rely on published reports for the background material. Fortunately, individual investors have a variety of sources to choose from. These include the reports and recommendations of major brokerage houses, the popular financial media, financial subscription services, computer-based software and online financial sources. These are all valuable sources of information, and the paragraphs that follow are not meant to replace them. Nevertheless to be an intelligent investor you should have at least a basic understanding of financial reports and financial statement analysis, for ultimately you will be drawing your own conclusions about a company and its shares.

Financial Statements

Financial statements are a vital part of company analysis. They enable investors to develop an opinion about the operating results and financial condition of a company. Investors use four financial statements in company analysis: the statement of financial position (commonly known as the balance sheet), the statement of changes in equity for the period (this used to be part of the balance sheet), the statement of comprehensive income (commonly known as the profit and loss, or income statement), and the statement of cash flows. The first three statements are essential to carrying out basic financial analysis, because they contain the data needed to compute many of the financial ratios. The statement of cash flows is used primarily to assess the cash/liquidity position of the firm.

Companies prepare financial statements on a quarterly or half-yearly basis (these are *abbreviated* statements, compiled for each three-month or six-month period of operation) and again at the end of each *fiscal year*. (The fiscal year is the 12-month period the company has defined as its operating year, not necessarily on 31 December.) Annual financial statements must be fully verified by an independent audit. They then

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

must be lodged with the Australian Securities and Investment Commission (ASIC) and the Australian Securities Exchange (ASX) and distributed on a timely basis to all shareholders in the form of annual reports.

By themselves, corporate financial statements are an important source of information to the investor. When used with financial ratios, and in conjunction with fundamental analysis, they become even more powerful. But to get the most from financial ratios, you must have a good understanding of the uses and limitations of the financial statements themselves.

balance sheet
a financial summary of a company's assets, liabilities and shareholders' equity at a single point in time.

The Balance Sheet The **balance sheet** is a statement of the company's assets, liabilities and shareholders' equity. The *assets* represent the resources of the company (the things the company owns). The *liabilities* are its debts. *Equity* is the difference between a company's assets and its liabilities. A balance sheet may be thought of as a summary of the company's assets balanced against its debt and ownership positions *at a single point in time* (on the last day of the fiscal year, or at the end of a half-year). To balance, the total assets must equal the total amount of liabilities and equity.

A typical balance sheet is illustrated in Table 7.3. It shows the comparative 2009–2010 figures for Universal Office Furnishings, the company that our investor is analysing. These tables accurately depict what real financial statements look like and how they're used in financial statement analysis.

income statement
a financial summary of the operating results of a company covering a specified period of time, usually one year.

The Income Statement The **income statement** provides a financial summary of the operating results of the company. It shows the amount of revenues generated over a period of time, the costs and expenses incurred over the same period, and the company's profits. (Profits are calculated by subtracting all costs and expenses, including taxes, from revenues.) Unlike the balance sheet, the income statement covers activities that have occurred over the course of time, or for a given operating period. Typically, this period extends no longer than a fiscal year.

Table 7.4 shows the income statements for Universal Office Furnishings for 2009 and 2010. Note that these annual statements cover operations for the 12-month period ending on 31 December, which corresponds to the date of the balance sheet. The income statement indicates how successful the company has been in using the assets listed on the balance sheet. That is, management's success in operating the company is reflected in the profit or loss that the company generates during the year.

statement of cash flows
a financial summary of a company's cash flow and other events that caused changes in the company's cash position.

The Statement of Cash Flows The **statement of cash flows** provides a summary of the company's cash flow and other events that caused changes in its cash position. A relatively new report, first required in Australia in 1991, this statement essentially brings together items from *both* the balance sheet and the income statement to show how the company obtained its cash and how it used this valuable liquid resource.

Unfortunately, because of certain accounting conventions (the *accrual concept* being chief among them), a company's reported earnings may bear little resemblance to its cash flow. That is, whereas profits are the difference between revenues and the accounting costs that have been charged against them, *cash flow is the amount of money a company actually takes in as a result of doing business*. As such, the cash flow statement is highly valued by analysts and others in the investment community, because it offers insight on the underlying financial condition of the firm. The fact is, corporate management has considerable leeway in constructing financial statements, which can, at times, lead to the manipulation of reported earnings. While it's relatively easy to manipulate an income statement, short of outright fraud, it's far more difficult to do that with a cash flow statement. That's because what doesn't show up on the income statement will most likely

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 7.3 Corporate Balance Sheet

Universal Office Furnishings Comparative Balance Sheets 31 December ($ in millions)

	2010	2009
Assets		
Current assets		
Cash and equivalents	$ 95.8	$ 80.0
Accounts receivables	227.2	192.4
Inventories	103.7	107.5
Other current assets	73.6	45.2
Total current assets	500.3	425.1
Non-current assets		
Property, plant & equipment, gross	771.2	696.6
Accumulated depreciation	(372.5)	
Property, plant & equipment, net	398.7	316.7
Other non-current assets	42.2	19.7
Total non-current assets	440.9	336.4
Total assets	**$941.2**	**$761.5**
Liabilities and shareholders' equity		
Current liabilities		
Accounts payable	$114.2	$ 82.4
Short-term debt	174.3	79.3
Other current liabilities	85.5	89.6
Total current liabilities	374.0	251.3
Non-current liabilities		
Long-term debt	177.8	190.9
Other non-current liabilities	94.9	110.2
Total non-current liabilities	272.7	301.1
Total liabilities	**$646.7**	**$552.4**
Shareholders' equity		
Ordinary shares	92.6	137.6
Retained earnings	201.9	71.5
Total shareholders' equity	**$294.5**	**$209.1**
Total liabilities and shareholders' equity	**$941.2**	**$761.5**

affect asset and/or liability accounts on the balance sheet, and therefore will impact on the company's statement of cash flows (usually in a negative fashion). (Nevertheless, accounting fraud can occur, as discussed in the *Ethics in Investing* box on page 225. As suggested there, audits are an important aspect of a company's financial statements.)

Table 7.5 presents the 2009–2010 statement of cash flows for Universal Office Furnishings. The statement is broken into three parts. The most important part is the first one, labelled 'Cash from operating activities'. It captures the *net cash flow from operating activities*—the line highlighted on the statement. This is what people typically mean when they say 'cash flow'—the amount of cash generated by the company and available for investment and financing activities.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 7.4 Corporate Income Statement

Universal Office Furnishings Income Statements Fiscal Year Ended 31 December
($ in millions)

	2010	2009
Net sales	$1938.0	$1766.2
Cost of goods sold	1128.5	1034.5
Gross profit	**$ 809.5**	**$ 731.7**
Selling, general, administrative and other operating expenses	$ 496.7	$ 419.5
Depreciation & amortisation	77.1	62.1
Other expenses	0.5	12.9
Total operating expenses	**$ 574.3**	**$ 494.5**
Earnings before interest & tax (EBIT)	**$ 235.2**	**$ 237.2**
Interest expense	$ 13.4	$ 7.3
Earnings before tax	221.8	229.9
Income tax	82.1	88.1
Net profit after tax	**$ 139.7**	**$ 141.8**
Dividends paid per share	$ 0.15	$ 0.13
Earnings per share (EPS)	$ 2.26	$ 2.17
Number of ordinary shares outstanding (in millions)	61.8	65.3

TABLE 7.5 Statement of Cash Flows

Universal Office Furnishings Statements of Cash Flows Fiscal Year Ended December 31
($ in millions)

	2010	2009
Cash from operating activities		
Receipts from customers	$2091.7	$2364.5
Payment to suppliers and employees	(1812.1)	(2084.5)
Dividends received	10.6	9.6
Income taxes paid	(88.1)	(84.0)
Net cash flow from operating activities	**$202.1**	**$205.6**
Cash from investing activities		
Acquisitions of property, plant and equipment—net	($150.9)	($ 90.6)
Net cash flow from investing activities	**($150.9)**	**($ 90.6)**
Cash from financing activities		
Proceeds from long-term borrowing	$749.8	$ 79.1
Reduction in long-term debt, including current maturities and early retirements	(728.7)	(211.1)
Net repurchase of capital stock	(47.2)	(9.8)
Payment of dividends on common stock	(9.3)	(8.5)
Net cash flow from financing activities	**($ 35.4)**	**($150.3)**
Net increase (decrease) in cash	**$ 15.8**	**($ 35.3)**
Cash and equivalents at beginning of period	$ 80.0	$ 115.3
Cash and equivalents at end of period	$ 95.8	$ 80.3

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

THE CASH-REALISATION RATIO— Want to keep an eye out for signs that earnings are being propped up by financial shenanigans? Then try comparing the statement of cash flows with the income statement. That can be done with the cash-realisation ratio, which shows how much of a company's net income is being converted into cash. Simply divide *net cash flow from operating activities* (from the statements of cash flow) by *net income* (from the income statement), preferably using average figures over a two- to four-year period. Generally speaking, companies with higher cash-realisation ratios have higher quality of earnings. Ideally, companies should have cash-realisation ratios of at least 1.0, indicating that net income and cash flow from operations are equal. Higher ratios indicate that the company is generating more in cash flow than it is in income—*a very healthy sign.*

Note that Universal's 2010 cash flow from operating activities was over $200 million, down a bit from the year before. This amount was more than enough to cover the company's investing activities ($150.9 million) and its financing activities ($35.4 million). Thus, Universal's actual cash position (see the line near the bottom of the statement, labelled 'Net increase (decrease) in cash') increased by some $15.8 million. That result was a big improvement over the year before, when the company's cash position fell by more than $35 million. A high (and preferably increasing) cash flow means the company has enough money to service debt, finance growth and pay dividends. In addition, you'd like to see the firm's cash position increase over time because of the positive impact that it has on the company's liquidity and its ability to meet operating needs in a prompt and timely fashion.

Financial Ratios

To see what accounting statements really have to say about the financial condition and operating results of a firm, we have to turn to *financial ratios*. Such ratios provide a different perspective on the financial affairs of the company—particularly with regard to the balance sheet and income statement—and thus *expand the information content of the company's financial statements*. Simply stated, **ratio analysis** is the study of the relationships between various financial statement accounts. Each measure relates an item on the balance sheet (or income statement) to another, or as is more often the case, a balance sheet account to an operating (income statement) item. In this way, we can look not so much at the absolute size of the financial statement accounts, but rather at what they indicate about the liquidity, activity or profitability of the company.

ratio analysis
the study of the relationships between financial statement accounts.

What Ratios Have to Offer Investors use financial ratios to evaluate the financial condition and operating results of the company and to compare those results to historical or industry standards. When using historical standards, investors compare the company's ratios from one year to the next. When using industry standards, investors compare a particular company's ratios to those of other companies in the same line of business.

Remember, the reason we use ratios is *to develop information about the past that can be used to get a handle on the future*. It's only from an understanding of a company's past performance that you can forecast its future with some degree of confidence. For example, even if sales have been expanding rapidly over the past few years, you must carefully assess the reasons for the growth, rather than naively assuming that past growth-rate trends will continue into the future. Such insights are obtained from financial ratios and financial statement analysis.

Financial ratios can be divided into five groups: (1) liquidity, (2) activity, (3) leverage, (4) profitability, and (5) per share, or market, measures. Using the 2010 figures from the Universal financial statements (Tables 7.3 and 7.4), we will now identify and briefly discuss some of the more widely used measures in each of these five categories.

liquidity measures
financial ratios concerned with a company's ability to meet its day-to-day operating expenses and satisfy its short-term obligations as they come due.

Measuring Liquidity **Liquidity measures** are concerned with the company's ability to meet its day-to-day operating expenses and satisfy its short-term obligations as they come due. Of major concern is whether a company has adequate cash and other liquid assets on hand to service its debt and operating needs in a prompt and timely fashion.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

ETHICS IN INVESTING

Cooking the Books: What Were They Thinking?

Recent scandals involving fraudulent accounting practices have resulted in public outrage all around the world. In January 2009, Ramalinga Rau, Chairman of the Indian tech company Satyam Computer Services, confessed that the company's books had been falsified and overstated the company's true revenues and assets while understating its expenses. Satyam's stock, which traded as an ADR on the New York Stock Exchange, lost more than 90% of its value between 2008 and 2009 as the scandal unfolded. This was hardly the first case of accounting fraud leading to financial ruin. It appears that creative and unethical accounting practices kept real costs and debts off the books at Enron, WorldCom, HIH, One-Tel, ABC Learning and dozens of other public companies. When the reality finally caught up with the fantasy, tens of thousands of investors and employees lost their life savings, while many corporate executives responsible for fraud reaped huge financial rewards. For example, 'cooking the books' at Enron cost investors almost $67 billion when the company declared bankruptcy in 2001; the implosion of WorldCom wiped out $175 billion of shareholder value, the biggest corporate bankruptcy in US history.

Among the common accounting tricks used in the recent corporate scandals, the following appeared to be most popular: capitalising operating expenses on the balance sheet, recognising fictitious or premature revenues, creating off-balance-sheet liabilities, using off-balance-sheet derivative contracts transactions and company shares to hedge risk, and writing off goodwill as extraordinary loss rather than amortising it over time to manipulate future earnings growth.

Critical Thinking Question One of the steps to strengthen corporate reporting is to separate internal and external audits of a company by requiring that an external auditor will not be permitted to provide internal audits to the same client. Will this regulation be able to eliminate conflict of interest? Discuss.

A general overview of a company's liquidity can be obtained from two simple measures: current ratio and net working capital. *Generally speaking, other things being equal, you'd like to see high or rising measures with both of these ratios.*

Current Ratio One of the most commonly cited of all financial ratios is the *current ratio*.

Equation 7.1

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{For Universal} = \frac{\$500.3}{\$374.0} = \underline{\underline{1.34}}$$

This figure indicates that UVRS had $1.34 in short-term resources to service every dollar of current debt. That's a fairly good number and, by most standards today, would suggest that the company is carrying an adequate level of liquid assets.

Net Working Capital Although technically not a ratio, *net working capital* is often viewed as such. Actually, net working capital is an absolute measure, which indicates the dollar amount of equity in the working capital position of the company. It is the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

difference between current assets and current liabilities. For 2010, the net working capital position for UVRS amounted to:

Equation 7.2

$$\text{Net working capital} = \text{Current assets} - \text{Current liabilities}$$

$$\text{For Universal} = \$500.3 - \$374.0 = \underline{\underline{\$126.3 \text{ million}}}$$

A net working capital figure that exceeds $125 000 000 is indeed substantial (especially for a company of this size). It reinforces our contention that the liquidity position of this company is good—so long as it is not made up of slow-moving, obsolete inventories and/or past-due accounts receivable.

Activity Ratios Measuring general liquidity is only the beginning of the analysis. We must also assess the composition and underlying liquidity of key current assets and evaluate how effectively the company is managing these resources. **Activity ratios** compare company sales to various asset categories in order to measure how well the company is utilising its assets. Three of the most widely used activity ratios deal with accounts receivable, inventory and total assets. *Here again, other things being equal, you'd like to see high or rising measures with all three of these ratios.*

activity ratios
financial ratios that are used to measure how well a firm is managing its assets.

Accounts Receivable Turnover A glance at most financial statements will reveal that the asset side of the balance sheet is dominated by just a few accounts that make up 80–90%, or even more, of total resources. Certainly, this is the case with Universal Office Furnishings, where, as you can see in Table 7.3, three entries (accounts receivable, inventory and other current assets) accounted for nearly 80% of total assets in 2010. Like Universal, most companies invest a significant amount of capital in accounts receivable, and for this reason they are viewed as a crucial corporate resource. *Accounts receivable turnover* is a measure of how these resources are being managed. It is computed as follows:

Equation 7.3

$$\text{Accounts receivable turnover} = \frac{\text{Annual sales}}{\text{Accounts receivable}}$$

$$\text{For Universal} = \frac{\$1938.0}{\$227.2} = \underline{\underline{8.53}}$$

In essence, this turnover figure indicates the kind of return (in the form of sales) that the company is getting from its investment in accounts receivable. Other things being equal, the higher the turnover figure, the more favourable it is. In 2010, UVRS was turning over its accounts receivable about 8.5 times a year. That excellent turnover rate suggests a very strong credit and collection policy. It also means that each dollar invested in accounts receivable was supporting, or generating, $8.53 in sales.

Inventory Turnover Another important corporate resource—and one that requires a considerable amount of management attention—is inventory. Control of inventory is important to the well-being of a company and is commonly assessed with the *inventory turnover* measure:

Equation 7.4

$$\text{Inventory turnover} = \frac{\text{Annual sales}}{\text{Inventory}}$$

$$\text{For Universal} = \frac{\$1938.0}{\$103.7} = \underline{\underline{18.69}}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Again, the more sales the company can get out of its inventory, the better the return on this vital resource. Universal's 2010 turnover of almost 19 times a year means that the company is holding inventory for less than a month—actually, for about 20 days (365 ÷ 18.69 = 19.5). That's the kind of performance you'd normally like to see. The higher the turnover figure, the less time an item spends in inventory and the better the return the company is able to earn from funds tied up in inventory.

Note that, rather than sales, some analysts prefer to use *cost of goods sold* in the numerator of Equation 7.4, on the premise that the inventory account on the balance sheet is more directly related to cost of goods sold from the income statement. Because cost of goods sold is less than sales, using it will, of course, lead to a lower inventory turnover figure—for UVRS in 2010: $1128.5 ÷ $103.7 = 10.88, versus 18.69 when sales is used. Regardless of whether you use sales (which we'll continue to do in this chapter) or cost of goods sold, for analytical purposes you'd still use the measure in the same way.

Total Asset Turnover *Total asset turnover* indicates how efficiently assets are being used to support sales. It is calculated as follows:

Equation 7.5

$$\text{Total asset turnover} = \frac{\text{Annual sales}}{\text{Total assets}}$$

$$\text{For Universal} = \frac{\$1938.0}{\$941.2} = \underline{\underline{2.06}}$$

Note in this case that UVRS is generating more than $2 in revenues from every dollar invested in assets. This is a fairly high number and is important because it has a direct bearing on corporate profitability. The principle at work here is much like the return to an individual investor: earning $100 from a $1000 investment is far more desirable than earning the same amount from a $2000 investment. A high total asset turnover figure suggests that corporate resources are being well managed and that the firm is able to realise a high level of sales (and, ultimately, profits) from its asset investments.

leverage measures
financial ratios that measure the amount of debt being used to support operations and the ability of the company to service its debt.

Leverage Measures

Leverage measures look at the firm's financial structure. It indicates the amount of debt being used to support the resources and operations of the company. The amount of indebtedness within the financial structure and the ability of the firm to service its debt are major concerns to potential investors. There are two widely used leverage ratios. The first, the debt–equity ratio, measures the amount of debt being used by the company. The second, times interest earned, assesses how well the company can service its debt.

Debt–Equity Ratio The *debt–equity ratio* measures the relative amount of funds provided by lenders and owners. It is computed as follows:

Equation 7.6

$$\text{Debt–equity ratio} = \frac{\text{Long-term debt}}{\text{Shareholders' equity}}$$

$$\text{For Universal} = \frac{\$177.8}{\$294.5} = \underline{\underline{0.60}}$$

Because highly leveraged companies (those that use large amounts of debt) run an increased risk of defaulting on their loans, this ratio is particularly helpful in assessing a share's risk exposure. The 2010 debt–equity ratio for UVRS is reasonably low (at 0.60)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

and shows that most of the company's capital comes from its owners. Stated another way, there was only 60 cents' worth of debt in the capital structure for every dollar of equity. Unlike the other measures we've looked at so far, a *low or declining* debt–equity ratio is preferable, as that would suggest the firm has a more reasonable debt load and, therefore, less exposure to financial risk.

Times Interest Earned *Times interest earned* is a so-called coverage ratio. It measures the ability of the firm to meet ('cover') its fixed interest payments. It is calculated as follows:

Equation 7.7

$$\text{Times interest earned} = \frac{\text{Earnings before interest and taxes}}{\text{Interest expense}}$$

$$\text{For Universal} = \frac{\$235.2}{\$13.4} = \underline{\underline{17.55}}$$

The ability of the company to meet its interest payments (which, with bonds, are fixed contractual obligations) in a timely fashion is an important consideration in evaluating risk exposure. Universal's times interest earned ratio indicates that the company has about $17.50 available to cover every dollar of interest expense. That's an outstanding coverage ratio—way above average! As a rule, a ratio of eight to nine times earnings is considered strong. To put this number in perspective, there's usually little concern until times interest earned drops to something less than two or three times earnings. Clearly, low or declining measures definitely are *not* what you want to find here.

It's recently become popular to use an alternative earnings figure in the numerator for the times interest earned ratio. In particular, some analysts are adding back depreciation and amortisation expenses to earnings and are using what is known as *earnings before interest, taxes, depreciation and amortisation* (EBITDA). Their argument is that because depreciation and amortisation are both non-cash expenditures (i.e. they're little more than bookkeeping entries), they should be added back to earnings to provide a more realistic 'cash-based' figure. The problem is that EBITDA figures invariably end up putting performance in a far more favourable light. (Indeed, many argue that this is the principal motivation behind their use.) As a result, EBITDA tends to sharply increase ratios such as times interest earned. For example, in the case of UVRS, adding depreciation and amortisation (2010: $77.1 million) to EBIT (2010: $235.2 million) results in a coverage ratio of $312.3 ÷ $13.4 = 23.31—versus 17.5 when this ratio is computed in the conventional way (with EBIT).

profitability measures
financial ratios that measure a company's returns by relating profits to sales, assets or equity.

Measuring Profitability

Profitability is a relative measure of success. Each of the various profitability measures relates the returns (profits) of a company to its sales, assets or equity. There are three widely used profitability measures: net profit margin, return on assets and return on equity. Clearly, the more profitable the company, the better—thus, *other things being equal*, *higher or increasing measures of profitability are what you'd like to see*.

Net Profit Margin This is the 'bottom line' of operations. *Net profit margin* indicates the rate of profit being earned from sales and other revenues. It is computed as follows:

Equation 7.8

$$\text{Net profit margin} = \frac{\text{Net profit after taxes}}{\text{Total revenues}}$$

$$\text{For Universal} = \frac{\$139.7}{\$1938.0} = \underline{\underline{7.2\%}}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The net profit margin looks at profits as a percentage of sales (and other revenues). Because it moves with costs, it also reveals the type of control that management has over the cost structure of the company. Note that UVRS had a net profit margin of 7.2% in 2010. That is, the company's return on sales was better than 7 cents on the dollar. That may be about average for large companies, but as we shall see, that's well above average for companies in the business equipment industry.

Return on Assets As a profitability measure, *return on assets (ROA)* looks at the amount of resources needed to support operations. Return on assets reveals management's effectiveness in generating profits from the assets it has available, and is perhaps *the single most important measure of return*. ROA is computed as follows:

Equation 7.9

$$\text{ROA} = \frac{\text{Net profit after taxes}}{\text{Total assets}}$$

$$\text{For Universal} = \frac{\$139.7}{\$941.2} = \underline{\underline{14.8\%}}$$

In the case of Universal Office Furnishings, the company earned almost 15% on its asset investments in 2010. That is a very healthy return, and well above average. As a rule, you'd like to see a company maintain as high an ROA as possible. The higher the ROA, the more profitable the company.

Return on Equity A measure of the overall profitability of the company, *return on equity (ROE)*, is closely watched by investors because of its direct link to the profits, growth and dividends of the company. Return on equity—or return on investment (ROI), as it's sometimes called—measures the return to the company's shareholders by relating profits to shareholder equity:

Equation 7.10

$$\text{ROE} = \frac{\text{Net profit after taxes}}{\text{Shareholders' equity}}$$

$$\text{For Universal} = \frac{\$139.7}{\$294.5} = \underline{\underline{47.4\%}}$$

ROE shows the annual payoff to investors, which in the case of UVRS amounts to nearly 48 cents for every dollar of equity. That, too, is an outstanding measure of performance and suggests that the company is doing what it has to do to keep its shareholders happy. Generally speaking, look out for a falling ROE, as it could mean trouble later on.

Breaking Down ROA and ROE ROA and ROE are both important measures of corporate profitability. But to get the most from these two measures, we have to break them down into their component parts. ROA, for example, is made up of two key components: the company's net profit margin and its total asset turnover. Thus, rather than using Equation 7.9 to find ROA, we can use the net profit margin and total asset turnover figures that we computed earlier (Equations 7.8 and 7.5, respectively). Using this expanded format, we can find Univeral's 2010 ROA:

Equation 7.11

$$\text{ROA} = \text{Net profit margin} \times \text{Total asset turnover}$$

$$\text{For Universal} = 7.2\% \times 2.06 = \underline{\underline{14.8\%}}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Note that we end up with the same figure as that found with Equation 7.9. So why would you want to use the expanded version of ROA? *The major reason is that it shows you what's driving company profits.* As an investor, you want to know if ROA is moving up (or down) because of improvement (or deterioration) in the company's profit margin and/or its total asset turnover. Ideally, you'd like to see ROA moving up (or staying high) because the company is doing a good job in managing *both* its profits and its assets.

Going from ROA to ROE Just as ROA can be broken into its component parts, so too can the return on equity (ROE) measure. Actually, ROE is nothing more than an extension of ROA. It brings the company's financing decisions into the assessment of profitability. That is, the expanded ROE measure indicates the extent to which financial leverage (or 'trading on the equity') can increase return to shareholders. The use of debt in the capital structure, in effect, means that *ROE will always be greater than ROA*. The question is how much greater. Rather than using the abbreviated version of ROE in Equation 7.10, we can compute ROE as follows:

Equation 7.12

$$\text{ROE} = \text{ROA} \times \text{Equity multiplier}$$

where

$$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Total shareholders' equity}}$$

To find ROE according to Equation 7.12, we first have to find the equity multiplier.

$$\text{Equity multiplier for Universal} = \frac{\$941.2}{\$294.5} = \underline{\underline{3.20}}$$

We can now find the 2010 ROE for Universal as follows:

$$\text{ROE} = 14.8 \times 3.20 = \underline{\underline{47.4\%}}$$

Here we can see that the use of debt (the equity multiplier) has magnified—in this case, tripled—returns to shareholders. (Note that these measures have been rounded to one decimal place. When taken to two decimal places, there is a small rounding error apparent: the number computed here is 47.44%, whereas the one computed earlier in Equation 7.10, was 47.36%.)

An Expanded ROE Equation Alternatively, we can expand Equation 7.12 still further by breaking ROA *into its component parts*. In this case, we could compute ROE as:

Equation 7.13

$$\text{ROE} = \text{ROA} \times \text{Equity multiplier}$$

$$= (\text{Net profit margin} \times \text{Total asset turnover}) \times \text{Equity multiplier}$$

$$\text{For Univeral} = 7.2\% \times 2.06 \times 3.20 = \underline{\underline{47.4\%}}$$

This expanded version of ROE is especially helpful, because it enables investors to assess the company's profitability in terms of three key components: net profit margin, total asset turnover and financial leverage. In this way, you can determine whether ROE is moving up simply because the firm is employing more debt, which isn't necessarily beneficial, or because of how the firm is managing its assets and operations, which certainly does have positive long-term implications. To shareholders, ROE is a critical measure of performance (and thus merits careful attention) because of the impact it has on growth and earnings—both of which, as we'll see in Chapter 8, play vital roles in the share valuation process.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

per share (market) ratios
financial ratios that convert key information about a firm to a per-share basis.

Per Share Ratios Finally, there are a number of **per share ratios** that convert key bits of information about the company to a per-share basis. Also called **market ratios**, they tell the investor exactly what portion of total profits, dividends and equity is allocated to each share. Popular per share ratios include earnings per share, price/earnings ratio, dividends per share, dividend yield, payout ratio and book value per share. We examined two of these measures (earnings per share and dividend yield) in Chapter 6. Let's look now at the other four.

Price/Earnings Ratio This measure, an extension of the earnings per share ratio, is used to determine how the market is pricing the company's shares. The *price/earnings (P/E) ratio* relates the company's earnings per share (EPS) to the market price of its shares.

To compute the P/E ratio, it is necessary to first know the share's EPS. Using the earnings per share equation given in Equation 6.1 (on page 184), we see that the EPS for UVRS in 2010 was:

$$\text{EPS} = \frac{\text{Net profit after taxes} - \text{Preference dividends}}{\text{Number of ordinary shares outstanding}}$$

$$\text{For Universal} = \frac{\$139.7 - \$0}{61.8} = \underline{\underline{\$2.26}}$$

In this case, the company's profits of $139.7 million translate into earnings of $2.26 for *each share*. (Note in this case that dividends are shown as $0 because the company has no preference shares outstanding.) Given this EPS figure and the share's current market price (assume it is currently trading at $41.50), we can use Equation 7.14 to determine the P/E ratio for Universal.

Equation 7.14

$$\text{P/E} = \frac{\text{Net price of ordinary shares}}{\text{EPS}}$$

$$\text{For Universal} = \frac{\$41.50}{\$2.26} = \underline{\underline{18.4}}$$

In effect, the share is currently selling at a multiple of about 18 times its 2010 earnings.

Price/earnings multiples are widely quoted in the financial press and are an essential part of many share valuation models. Other things being equal, you would like to find shares with *rising P/E ratios,* because higher P/E multiples usually translate into higher future share prices and better returns to shareholders. But even though you'd like to see them going up, you also want to *watch out for P/E ratios that become too high* (relative either to the market or to what the share has done in the past). When this multiple gets too high, it may be a signal that the share is becoming overvalued (and may be due for a fall).

PEG ratio
a financial ratio that relates a share's price/earnings multiple to the company's rate of growth in earnings.

One way to assess the P/E ratio is to compare it to the company's rate of growth in earnings. The market has developed a measure of this comparison called the **PEG ratio**. Basically, it looks at the latest P/E relative to the three- to five-year rate of growth in earnings. (The earnings growth rate can be all historical—the last three to five years—or perhaps part historical and part forecasted.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

As we saw earlier, Universal Office Furnishings had a P/E ratio of 18.4 times earnings in 2010. If corporate earnings for the past five years had been growing at an average annual rate of, say, 15%, the PEG ratio is computed as:

Equation 7.15

$$\text{PEG ratio} = \frac{\text{Share's P/E ratio}}{\text{Three- to five-year growth rate in earnings}}$$

$$\text{For Universal} = \frac{18.4}{15.0} = \underline{\underline{1.21}}$$

A PEG ratio this close to 1.0 is certainly reasonable. It suggests that the company's P/E ratio is not out of line with its earnings growth. In fact, the idea is to *look for shares that have PEG ratios that are equal to or less than 1*. In contrast, a high PEG ratio means the share's P/E ratio has outpaced its growth in earnings and, if anything, the share is probably 'fully valued'. Some investors, in fact, won't even look at shares if their PEG ratios are too high—say, more than 1.5 or 2.0. The PEG ratio is probably something you would want to look at, because it certainly is not unreasonable to expect some correlation between a share's P/E ratio and its rate of growth in earnings.

Dividends per Share The principle here is the same as for EPS: to translate total ordinary dividends paid by the company into a per-share figure. (*Note:* If not shown on the income statement, the amount of dividends paid to ordinary shareholders can usually be found on the statement of cash flows—see Table 7.5.) Dividends per share is measured as follows:

Equation 7.16

$$\text{Dividends per share} = \frac{\text{Annual dividends paid to ordinary shares}}{\text{Number of ordinary shares outstanding}}$$

$$\text{For Universal} = \frac{\$9.3}{61.8} = \underline{\underline{\$0.15}}$$

For 2010, Universal paid out dividends of $0.15 per share—at a quarterly rate of about 3.75 cents per share.

As we saw in the preceding chapter, we can relate dividends per share to the market price of the share to determine its *dividend yield* (i.e. $0.15 ÷ $41.50 = 0.4%). Clearly, you won't find Universal Office Furnishings within the income sector of the market. It pays very little in annual dividends and has a dividend yield of less than 0.5%.

Payout Ratio Another important dividend measure is the dividend *payout ratio*. It indicates how much of its earnings a company pays out to shareholders in the form of dividends. Well-managed companies try to maintain target payout ratios. If earnings are going up over time, so will the company's dividends. The payout ratio is calculated as follows:

Equation 7.17

$$\text{Payout ratio} = \frac{\text{Dividends per share}}{\text{Earnings per share}}$$

$$\text{For Universal} = \frac{\$0.15}{\$2.26} = \underline{\underline{0.07}}$$

For Universal in 2010, dividends accounted for about 7% of earnings. Traditionally, most companies that pay dividends tend to pay out somewhere between 40% and 60% of earnings. By that standard, Universal's payout, like its dividend yield, is quite low. But that's not necessarily bad, as it indicates that the company is retaining most of its earnings to, at least in part, internally finance its rapid growth. Indeed, it is quite

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

common for growth-oriented companies to have low payout ratios. In Australia, changes to the tax treatment of dividends for various categories of investors in the 1980s have led to increases in dividend payout ratios across all industries. Dividend payout ratios have averaged around 60% for the top 100 companies over the past decade.

Although low dividend payout ratios are not a cause for concern, *high payout ratios may be*. A payout ratio that is high is often an indication that the company may not be able to maintain its current level of dividends. That generally means that dividends will have to be cut back to more reasonable levels. And if there's one thing the market doesn't like, it's cuts in dividends; they're usually associated with big cuts in share prices.

Book Value per Share The last per share ratio is *book value per share*, a measure that deals with shareholders' equity. Actually, *book value is simply another term for equity (or net worth)*. It represents the difference between total assets and total liabilities. Note that in this case we are defining equity as *ordinary shareholders' equity,* which would *exclude* preference shares. That is, *ordinary shareholders' equity = total equity − preference shares*. (Universal has no preference shares outstanding, so its total equity equals its ordinary shareholders' equity.) Book value per share is computed as follows:

Equation 7.18

$$\text{Book value per share} = \frac{\text{Ordinary shareholders' equity}}{\text{Number of ordinary shares outstanding}}$$

$$\text{For Universal} = \frac{\$294.5}{61.8} = \underline{\underline{\$4.76}}$$

Presumably, a share should sell for *more* than its book value (as Universal does). If not, it could be an indication that something is seriously wrong with the company's outlook and profitability.

A convenient way to relate the book value of a company to the market price of its share is to compute the *price-to-book-value* ratio.

Equation 7.19

$$\text{Price-to-book-value ratio} = \frac{\text{Market price of ordinary share}}{\text{Book value per share}}$$

$$\text{For Universal} = \frac{\$41.50}{\$4.76} = \underline{\underline{8.72}}$$

Widely used by investors, this ratio shows how aggressively the share is being priced. Most shares have a price-to-book-value ratio of more than 1.0—which simply indicates that the share is selling for more than its book value. In fact, in strong bull markets, it is not uncommon to find shares trading at four or five times their book values, or even more. Universal's price-to-book ratio of 8.7 times is definitely on the high side. That is something to evaluate closely. It may indicate that the share is already fully priced, or perhaps even overpriced. Or it could result from nothing more than a relatively low owners' equity ratio.

Interpreting the Numbers

Rather than compute all the financial ratios themselves, most investors rely on published reports for such information. Many large brokerage houses and a variety of financial services firms publish such reports. An example is given in Figure 7.1. These reports provide a good deal of vital information in a convenient and easy-to-read format. Best of

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 7.1 An Example of an Internet Report with Financial Statistics

This and similar reports are widely available to investors and play an important part in the security analysis process.

Stockland Corp. Ltd. (SGP.AX) At 14:55: 3.92 ↑ 0.02 (0.51%)

Key Statistics

Data provided by Capital IQ, except where noted.

Valuation Measures	
Market Cap (intraday)[5]:	9.33B
Enterprise Value (19/10/2010)[3]:	N/A
Trailing P/E (ttm, intraday):	19.70
Forward P/E (fye 30/06/2012)[1]:	11.88
PEG Ratio (5 yr expected)[1]:	1.97
Price/Sales (ttm):	4.35
Price/Book (mrq):	1.07
Enterprise Value/Revenue (ttm)[3]:	NaN
Enterprise Value/EBITDA (ttm)[3]:	N/A

Financial Highlights	
Fiscal Year	
Fiscal Year Ends:	30 Jun
Most Recent Quarter (mrq):	30/06/2010
Profitability	
Profit Margin (ttm):	22.43%
Operating Margin (ttm):	30.87%
Management Effectiveness	
Return on Assets (ttm):	2.88%
Return on Equity (ttm):	5.51%
Income Statement	
Revenue (ttm):	2.13B
Revenue Per Share (ttm):	0.90
Qtrly Revenue Growth (yoy):	27.60%
Gross Profit (ttm):	N/A
EBITDA (ttm):	671.90M
Net Income Avl to Common (ttm):	478.40M
Diluted EPS (ttm):	0.20
Qtrly Earnings Growth (yoy):	N/A
Balance Sheet	
Total Cash (mrq):	911.40M
Total Cash Per Share (mrq):	0.38
Total Debt (mrq):	2.84B
Total Debt/Equity (mrq):	32.81
Current Ratio (mrq):	1.11
Book Value Per Share (mrq):	3.64
Cash Flow Statement	
Operating Cash Flow (ttm):	791.20M
Levered Free Cash Flow (ttm):	65.51M

Trading Information	
Stock Price History	
Beta:	N/A
52-Week Change[3]:	-2.48%
S&P500 52-Week Change[3]:	7.91%
52-Week High (05/03/2010)[3]:	4.23
52-Week Low (21/05/2010)[3]:	3.52
50-Day Moving Average[3]:	3.96
200-Day Moving Average[3]:	3.90
Share Statistics	
Avg Vol (3 month)[3]:	9,899,480
Avg Vol (10 day)[3]:	7,239,100
Shares Outstanding[5]:	2.38B
Float:	2.20B
% Held by Insiders[6]:	N/A
% Held by Institutions[6]:	N/A
Shares Short [3]:	N/A
Short Ratio [3]:	N/A
Short % of Float [3]:	N/A
Shares Short (prior month)[3]:	N/A
Dividends & Splits	
Forward Annual Dividend Rate[4]:	N/A
Forward Annual Dividend Yield[4]:	N/A
Trailing Annual Dividend Yield[3]:	0.11
Trailing Annual Dividend Yield[3]:	2.80%
5 Year Average Dividend Yield[4]:	N/A
Payout Ratio[4]:	N/A
Dividend Date[3]:	N/A
Ex-Dividend Date[4]:	N/A
Last Split Factor (new per old)[2]:	N/A
Last Split Date[3]:	N/A

(*Source:* Yahoo!7 Finance, <http://au.finance.yahoo.com>. Reproduced with permission of Yahoo! Inc. © 2010 Yahoo! Inc. YAHOO! and the YAHOO! logo are registered trademarks of Yahoo! Inc.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

all, they relieve investors of the chore of computing the financial ratios themselves. (Similar information is also available from a number of online services, as well as from various software providers.) Even so, as an investor, you must be able to evaluate this published information. To do so, you need not only a basic understanding of financial ratios but also some performance standard, or benchmark, against which you can assess trends in company performance.

Basically, financial statement analysis uses two types of performance standards: historical and industry. With *historical standards*, various financial ratios and measures are run on the company for a period of three to five years (or longer). You would use these to assess developing trends in the company's operations and financial condition. That is, are they improving or deteriorating, and where do the company's strengths and weaknesses lie? In contrast, *industry standards* enable you to compare the financial ratios of the company with comparable firms or with the average results for the industry as a whole. Here, we focus on determining the relative strengths of the firm with respect to its competitors. Using Universal Office Furnishings, we'll see how to use both of these standards of performance to evaluate and interpret financial ratios.

Historical and Industry Standards Look at Table 7.6. It provides a summary of historical data and average industry figures (for the latest year) for most of the ratios we have discussed. By carefully evaluating these ratios, we should be able to draw some basic conclusions about the financial condition, operating results and general financial health of UVRS. By comparing the financial ratios contained in Table 7.6, we can make the following observations about the company:

1. Universal's *liquidity position* is a bit below average. This doesn't seem to be a source of major concern, however, especially when you consider its accounts receivable and inventory positions. That is, based on its respective turnover ratios (see item 2 below), both of these current assets seem to be very well controlled, which could explain the relatively low current ratio of this company. That is, the current ratio is a bit below average, not because the company has a lot of current liabilities, but because it is doing such a good job in controlling current assets.
2. Universal's *activity measures* are all way above average. This company consistently has very high turnover measures, which in turn make significant contributions not only to the company's liquidity position but also to its profitability. Clearly, the company has been able to get a lot more from its assets than the industry as a whole.
3. The company's *leverage position* seems well controlled. It tends to use a lot less debt in its financial structure than the average company in the office equipment industry. The payoff for this judicious use of debt comes in the form of a coverage ratio that's well above average.
4. The *profitability picture* for Universal is equally attractive. The profit margin, ROA and ROE are all well above the industry norms. Clearly, the company is doing an outstanding job in managing its profits and is getting good results from its sales, assets and equity.

In summary, our analysis shows that this company is very well managed and highly profitable. The results of this are reflected in *per share ratios* that are consistently equal or superior to industry averages. Universal does not pay out a lot in dividends, but that's only because it uses those valuable resources to finance its growth and to reward its investors with consistently high ROEs.

INVESTOR FACTS

COULD THERE BE TROUBLE BREWING?—Analysts often cite the following financial statement developments as potential indicators that a company may be in poor financial health or heading for problems:

- Inventories and accounts receivable growing faster than sales.
- A falling current ratio, caused by current liabilities increasing faster than current assets.
- A high and rapidly increasing debt–equity ratio, suggesting that the company may have trouble servicing its debt in the future.
- Cash flow from operations dropping below a company's net income, meaning the company is propping up its earnings by selling assets or using some other technique to shuffle its numbers.
- The presence of a lot of indecipherable off-balance-sheet accounts and extraordinary income entries.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 7.6 Comparative Historical and Industry Ratios EXCEL WITH SPREADSHEETS

	Historical Figures for Universal Office Furnishings				Industry Averages for the Office Equipment Industry in 2010
	2007	2008	2009	2010	
Liquidity measures					
Current ratio	1.55	1.29	1.69	1.34	1.45
Activity measures					
Accounts receivable turnover	9.22	8.87	9.18	8.53	5.70
Inventory turnover	15.25	17 .17	16.43	18.69	7 .80
Total asset turnover	1.96	2.12	2.32	2.06	0.85
Leverage measures					
Debt–equity ratio	0.70	0.79	0.91	0.60	1.58
Times interest earned	15.37	26.22	32.49	17 .55	5.60
Profitability measures					
Net profit margin	6.6%	7 .5%	8.0%	7 .2%	4.6%
Return on assets	9.8%	16.4%	18.6%	14.8%	3.9%
Return on equity	25.9%	55.5%	67 .8%	47 .4%	17 .3%
Per share measures					
Earnings per share	$1.92	$2.00	$2.17	$2.26	N/A
Price/earnings ratio	16.2	13.9	15.8	18.4	16.2
Dividend yield	0.3%	0.4%	0.4%	0.4%	1.1%
Payout ratio	5.2%	5.5%	6.0%	6.6%	24.8%
Price-to-book-value ratio	7 .73	10.73	10.71	8.72	3.54

Looking at the Competition In addition to analysing a company historically and relative to the average performance of the industry, it's useful to evaluate the company relative to two or three of its major competitors. A lot can be gained from seeing how a company stacks up against its competitors and by determining whether it is, in fact, well positioned to take advantage of unfolding developments. Table 7.7 offers an array of comparative financial statistics for Universal and three of its major competitors. One is about the same size (Cascade Industries), one is much smaller (Colwyn Furniture) and one is much larger (High Design).

As the data in Table 7.7 show, Universal can hold its own against other leading producers in the industry. Indeed, in virtually every category, Universal's numbers are about equal or superior to those of its three major competitors. It may not be the biggest (or the smallest), but it outperforms them all in profit margins and growth rates (in revenues and earnings). Equally important, it has the highest asset turnover, ROE and price/earnings ratio. Tables 7.6 and 7.7 clearly show that Universal Office Furnishings is a solid, up-and-coming business that has been able to make a name for itself in a highly competitive industry. The company has done well in the past and appears to be well managed today. Our major concern at this point (and the topic of discussion in Chapter 8) is whether Universal can continue to produce above-average returns to investors.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 7.7 Comparative Financial Statistics: Universal Office Furnishings and Its Major Competitors (All figures are for year-end 2010 or for the five-year period ending in 2010; $ in millions)

Financial Measure	**Universal Office Furnishings**	Cascade Industries	Colwyn Furniture	High Design
Total assets	**$941.2**	$906.7	$342.7	$3037.6
Long-term debt	**$177.8**	$124.2	$73.9	$257.8
Shareholders' equity	**$294.5**	$501.3	$183.9	$1562.2
Shareholders' equity as % of total assets	**31.3%**	55.3%	53.7%	51.4%
Total revenues	**$1938.0**	$1789.3	$642.2	$3316.1
Net earnings	**$139.7**	$87.4	$38.5	$184.2
Net profit margin	**7.2%**	4.9%	6.0%	5.5%
Five-year growth rates in:				
Total assets	**14.36%**	19.44%	17.25%	17.73%
Total revenues	**18.84%**	17.76%	15.91%	15.84%
EPS	**56.75%**	38.90%	21.10%	24.66%
Dividends	**1.48%**	11.12%	N/A	12.02%
Total asset turnover	**2.063**	1.973	1.883	1.093
Debt–equity ratio	**0.60**	0.43	1.46	0.17
Times interest earned	**17.553**	13.383	8.353	14.363
ROA	**14.8%**	9.5%	6.7%	6.7%
ROE	**47.4%**	18.8%	21.8%	13.0%
P/E ratio	**18.43**	14.43	13.33	12.43
PEG ratio	**1.21**	2.42	1.98	1.09
Payout ratio	**6.6%**	26.2%	N/A	32.4%
Dividend yield	**0.4%**	1.8%	N/A	2.6%
Price-to-book-value ratio	**8.72**	2.71	2.93	1.59

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

7.12 What is *fundamental analysis*? Does the performance of a company have any bearing on the value of its shares? Explain.

7.13 Why do investors bother to look at the historical performance of a company when future behaviour is what really counts? Explain.

7.14 What is *ratio analysis*? Describe the contribution of ratio analysis to the study of a company's financial condition and operating results.

7.15 Contrast historical standards of performance with industry standards. Briefly note the role of each in analysing the financial condition and operating results of a company.

To test your mastery of the content covered in this chapter and to create your own study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Discuss the security analysis process, including its goals and functions. Success in buying shares is largely a matter of careful security selection and investment timing. Security analysis helps the investor to make the selection decision by gauging the intrinsic value (underlying worth) of a share.

Key Terms

intrinsic value, *p. 210*
security analysis, *p. 210*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 2 Understand the purpose and contributions of economic analysis. Economic analysis evaluates the general state of the economy and its potential effects on security returns. Its purpose is to characterise the future economic environment the investor is likely to face, and to set the tone for the security analysis process.	business cycle, *p. 213* economic analysis, *p. 212*
LG 3 Describe industry analysis and note how it is used. In industry analysis, the investor focuses on the activities of one or more industries. Especially important are how the competitive position of a particular industry stacks up against others and which companies within an industry hold special promise.	growth cycle, *p. 218* industry analysis, *p. 217*
LG 4 Demonstrate a basic appreciation of fundamental analysis and why it is used. Fundamental analysis looks closely at the financial and operating characteristics of the company—at its competitive position, its sales and profit margins, its asset mix, its capital structure and, eventually, its future prospects. A key aspect of this analytical process is company analysis, which involves an in-depth study of the financial condition and operating results of the company.	balance sheet, *p. 221* fundamental analysis, *p. 219* income statement, *p. 221* statement of cash flows, *p. 221*
LG 5 Calculate a variety of financial ratios and describe how financial statement analysis is used to gauge the financial vitality of a company. The company's balance sheet, income statement and statement of cash flows are all used in company analysis. An essential part of this analysis is financial ratios, which expand the perspective and information content of financial statements. There are five broad categories of financial ratios: liquidity, activity, leverage, profitability and per share (market) ratios. All involve the study of relationships between financial statement accounts.	activity ratios, *p. 226* per share (market) ratios, *p. 231* leverage measures, *p. 227* liquidity measures, *p. 224* PEG ratio, *p. 231* profitability measures, *p. 228* ratio analysis, *p. 224*
LG 6 Use various financial measures to assess a company's performance, and explain how the insights derived form the basic input for the valuation process. To evaluate financial ratios properly, it is necessary to base the analysis on historical and industry standards of performance. Historical standards are used to assess developing trends in the company. Industry benchmarks enable the investor to see how the firm stacks up against its competitors. Together, they provide insight into how well the company is situated to take advantage of unfolding market conditions and opportunities.	

Discussion Questions

LG 2

Q7.1 Economic analysis is generally viewed as an integral part of the 'top-down' approach to security analysis. In this context, identify each of the following and note how each would probably behave in a strong economy.

a. Fiscal policy
b. Interest rates
c. Industrial production
d. Retail sales
e. Producer prices

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG1 LG2 **Q7.2** As an investor, what kind(s) of economic information would you look for if you were thinking about investing in the following?

- **a.** An airline share
- **b.** A cyclical share
- **c.** A telecommunications share
- **d.** A building materials share
- **e.** A mining share

LG5 **Q7.3** Match the specific ratios in the left-hand column with the category in the right-hand column to which it belongs.

- **a.** Inventory turnover
- **b.** Debt–equity ratio
- **c.** Current ratio
- **d.** Net profit margin
- **e.** Return on assets
- **f.** Total asset turnover
- **g.** Price/earnings ratio
- **h.** Times interest earned
- **i.** Price-to-book-value ratio
- **j.** Payout ratio

- **i.** Profitability ratios
- **ii.** Activity ratios
- **iii.** Liquidity ratios
- **iv.** Leverage ratios
- **v.** Per share ratios

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG5 **P7.1** Assume you are given the following abbreviated financial statement.

	($ in millions)
Current assets	$150.0
Fixed and other assets	200.0
Total assets	$350.0
Current liabilities	$100.0
Long-term debt	50.0
Shareholders' equity	200.0
Total liabilities and equities	$350.0
Ordinary shares outstanding	10 million shares
Total revenues	$500.0
Total operating costs and expenses	435.0
Interest expense	10.0
Income taxes	20.0
Net profits	$ 35.0
Dividends paid to ordinary shareholders	$ 10.0

On the basis of this information, calculate as many liquidity, activity, leverage, profitability and per share measures as you can. (*Note:* Assume the current market price of the share is $75.)

LG5 **P7.2** BOOKV has $750 000 000 in total assets, no preference shares and total liabilities of $300 000 000. There are 300 000 000 shares outstanding. What is the book value per share?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG5 **P7.3** BOOKV has $750 000 000 in total assets, no preference shares and total liabilities of $300 000 000. There are 300 000 000 shares outstanding. The share is selling for $5.25. What is the price-to-book-value ratio?

LG6 **P7.4** The Amherst Company has net profits of $10 million, sales of $150 million, and 2.5 million shares outstanding. The company has total assets of $75 million and total shareholders' equity of $45 million. It pays $1 per share in dividends, and the share trades at $20. Given this information, determine the following:

a. Amherst's EPS
b. Amherst's book value per share and price-to-book-value ratio
c. The company's P/E ratio
d. The company's net profit margin
e. The share's dividend payout ratio and its dividend yield
f. The share's PEG ratio, given that the company's earnings have been growing at an average annual rate of 7.5%

LG5 **P7.5** ZAPIT ordinary shares are selling at a P/E ratio of 15 times trailing earnings. The share price is $25. What were the company's earnings per share?

LG5 **P7.6** PEGCOR has a P/E ratio of 15. Earnings per share are $2.00, and the expected EPS five years from today is $3.22. Calculate the PEG ratio. (Refer to Chapter 4 if necessary.)

LG5 **P7.7** Highgate Computer Company produces $2 million in profits from $28 million in sales. It has total assets of $15 million.

a. Calculate Highgate's total asset turnover and its net profit margin.
b. Find the company's ROA, ROE and book value per share, given that it has a total net worth of $6 million and 500 000 shares outstanding.

LG5 **P7.8** The following data have been gathered from the financial statements of HiFly Corporation:

	2009	2010
Operating profit	$550 000 000	$600 000 000
Interest expense	200 000 000	250 000 000
Taxes	126 000 000	126 000 000
Net profit	224 000 000	224 000 000

Calculate the times interest earned ratios for 2009 and 2010. Is the company more or less able to meet its interest payments in 2010 when measured this way?

LG5 LG6 **P7.9** Financial Learning Systems has 2.5 million ordinary shares outstanding and 100 000 preference shares. (The annual preference dividend is $5 a share, and the annual ordinary dividend is 25 cents a share.) Last year, the company generated net profits (after taxes) of $6 850 000. The company's balance sheet shows total assets of $78 million, total liabilities of $32 million, and $5 million in preference shares. The company's ordinary shares are currently trading in the market at $45 a share.

a. Given the preceding information, find the EPS, P/E ratio and book value per share.
b. What will happen to the price of the share if the EPS *rises* to $3.75 and the P/E ratio stays where it is? What will happen if the EPS *drops* to $1.50 and the P/E ratio doesn't change?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

c. What will happen to the price of the share if the EPS rises to $3.75 and the P/E ratio jumps to 25 times earnings?
d. What will happen if *both* the EPS and the P/E ratio *drop*—to $1.50 and 10 times earnings, respectively?
e. Comment on the effect that the EPS and the P/E ratio have on the market price of the share.

LG5 **P7.10** The Buffalo Manufacturing Company has total assets of $10 million, an asset turnover of 2.0 times, and a net profit margin of 15%.
a. What is Buffalo's return on assets?
b. Find Buffalo's ROE, given that 40% of the assets are financed with shareholders' equity.

LG5 **P7.11** Find the EPS, P/E ratio and dividend yield of a company that has 5 million shares outstanding (the shares trade in the market at $25), earns 10% after taxes on annual sales of $150 million and has a dividend payout ratio of 35%. At what rate would the company's net earnings be growing if the share had a PEG ratio of 2.0?

LG5 **P7.12** FigureItOut Pty Ltd has a net profit margin of 8% and a total asset turnover of two times. What is the company's return on assets?

LG5 **P7.13** FigureItOut Pty Ltd has a net profit margin of 8%, a total asset turnover of two times, total assets of $1 billion and total equity of $500 million. What is the company's return on equity?

LG5 **P7.14** FigureItOut Pty Ltd has a net profit margin of 8%, a total asset turnover of two times, total assets of $1 billion and total equity of $500 million. What were the company's sales and net profit?

LG5 **P7.15** Using the resources available at your campus or public library (or on the Internet), select any shares you like and determine as many of the profitability, activity, liquidity, leverage and market ratios covered in this and the preceding chapter as you can. Compute the ratios for the latest available fiscal year. (*Note:* Show your work for all calculations.)

LG4 LG5 LG6 **P7.16** Listed below are six pairs of shares. Pick *one of these pairs* and then, using the resources available at your campus or public library (or on the Internet), comparatively analyse the two shares. Which is fundamentally stronger and holds more promise for the future? Compute (or obtain) as many ratios as you see fit. As part of your analysis, obtain the analysts' reports on both shares, and use them for added insights about the companies and their shares.
a. Fairfax Media versus Newscorp
b. Tatts Group versus Tabcorp
c. David Jones versus Reject Shop
d. Boral versus CSR
e. National Bank versus Westpac
f. JB Hi-Fi versus Harvey Norman

LG4 LG5 LG6 **P7.17** Listed on page 242 are the 2009 and 2010 financial statements for Sandy Bay Marine Motors, a major manufacturer of top-of-the-line outboard motors.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Sandy Bay Marine Motors Balance Sheets ($ in thousands)

	As of 31 December	
	2010	2009
Assets		
Current assets		
Cash and cash equivalents	$56 203	$88 942
Accounts receivable, net of allowances	20 656	12 889
Inventories	29 294	24 845
Prepaid expenses	5 761	6 536
Total current assets	$111 914	$133 212
Property, plant & equipment, at cost	$137 273	$85 024
Less: Accumulated depreciation and amortisation	(50 574)	(44 767)
Net fixed assets	$86 699	$40 257
Other assets	$105 327	$51 001
Total assets	$303 940	$224 470
Liabilities and Shareholders' Equity		
Current liabilities		
Notes and accounts payable	$28 860	$4 927
Dividends payable	1 026	791
Accrued liabilities	20 976	16 780
Total current liabilities	$50 862	$22 498
Non-current liabilities		
Long-term debt	$40 735	$20 268
Shareholders' equity		
Ordinary shares	$7 315	$7 103
Share premium reserve	111 108	86 162
Retained earnings	93 920	88 439
Total shareholders' equity	$212 343	$181 704
Total liabilities and equity	$303 940	$224 470
Average number of ordinary shares outstanding	10 848 000	10 848 000

Sandy Bay Marine Motors Income Statements ($ in thousands)

	For the Year Ended 31 December	
	2010	2009
Net sales	$259 593	$245 424
Cost of goods sold	133 978	127 123
Gross profit margin	$125 615	$ 118 301
Operating expenses:	72 098	70 368
Earnings from operations	$53 517	$47 933
Other income (expense)—net	4 193	3 989
Earnings before income taxes	$57 710	$51 922
Provision for income taxes	22 268	19 890
Net earnings	$35 442	$32 032
Cash dividends ($0.35 and $0.27 per share)	$3 769	$2 947
Average price per share (in the fourth quarter of the year)	$74.25	$80.75

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

a. On the basis of the information provided, calculate the following financial ratios for 2009 and 2010.

	Sandy Bay Marine Motors		Industry Averages (for 2010)
	2009	2010	
Current ratio			2.36
Total asset turnover			1.27
Debt–equity ratio			10.00
Net profit margin			9.30
ROA			15.87
ROE			19.21
EPS			1.59
P/E ratio			19.87
Dividend yield			0.44
Payout ratio			0.26
Price-to-book-value			6.65

b. Considering the financial ratios you computed, along with the industry averages, how would you characterise the financial condition of Sandy Bay Marine Motors? Explain.

LG5 LG6 **P7.18** The following summary financial statistics were obtained from the 2009 Sandy Bay Marine Motors (SBMM) annual report.

	2009 ($ in millions)
Net sales	$179.3
Total assets	$136.3
Net earnings	$ 20.2
Shareholders' equity	$109.6

a. Use the profit margin and asset turnover to compute the 2009 ROA for SBMM. Now introduce the equity multiplier to find ROE.
b. Use the summary financial information from the 2010 SBMM financial statements (see Problem 7.17) to compute the 2010 ROA and ROE. Use the same procedures to calculate these measures as you did in part **a**.
c. On the basis of your calculations, describe how *each* of the three components (profit margin, asset turnover, and leverage) contributed to the change in SBMM's ROA and ROE between 2009 and 2010. Which component(s) contributed the most to the change in ROA? Which contributed the most to the change in ROE?
d. Generally speaking, do you think that these changes are fundamentally healthy for the company?

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 7.1 SOME FINANCIAL RATIOS ARE REAL EYE-OPENERS

LG5 LG6 Jack Simms is a resident of Ballarat, Victoria, where he is a prosperous farmer and businessman. He has also built up a sizeable portfolio of shares, which, he believes, is due to the fact that he thoroughly evaluates each security he invests in. Jack prefers to calculate his own ratios even though he could easily obtain various types of analytical reports from his stockbroker at no cost. (In fact, Peter Smith, his stockbroker, has been volunteering such services for years.)

Recently, Jack has been keeping an eye on a small chemical issue. The company, Southern Chemical Company, is big in the fertiliser business—which, not by coincidence, is something Jack knows a lot about. Not long ago, he received a copy of the company's latest financial statements (summarised here) and decided to take a closer look at the company.

Balance Sheet ($ in thousands)

Cash	$ 1 250		
Accounts receivable	8 000	Current liabilities	$10 000
Inventory	12 000	Non-current liabilities	8 000
Current assets	21 250	Shareholders' equity	12 000
Fixed and other assets	8 750		
Total	$30 000	Total	$30 000

Income Statement ($ in thousands)

Sales	$ 50 000
Cost of goods sold	25 000
Operating expenses	15 000
Operating profit	$ 10 000
Interest expense	2 500
Taxes	2 500
Net profit	$ 5 000
Dividends paid to ordinary shareholders ($ in thousands)	$ 1 250
Number of ordinary shares outstanding	50 million
Recent market price of the share	$ 2.50

QUESTIONS

1. Calculate the following ratios, using the Southern Chemical Company figures.

	Latest Industry Averages		Latest Industry Averages
Liquidity		*Per Share Ratios*	
a. Net working capital	N/A	l. Earnings per share	$0.20
b. Current ratio	1.95	m. Price/earnings ratio	20.0
Activity		n. Dividends per share	$0.10
c. Accounts receivable turnover	5.95	o. Dividend yield	2.5%
d. Inventory turnover	4.50	p. Payout ratio	50.0%
e. Total asset turnover	2.65	q. Book value per share	$0.63
Leverage		r. Price-to-book-value ratio	6.4
f. Debt–equity ratio	0.45		
g. Times interest earned	6.75		
Profitability			
h. Operating ratio	85.0%		
i. Net profit margin	8.5%		
j. Return on assets	22.5%		
k. ROE	32.2%		

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

2. Compare the company ratios you prepared to the industry figures. What are the company's strengths? What are its weaknesses?
3. What is your overall assessment of Southern Chemical? Do you think Simms should continue with his evaluation of the shares? Explain.

Case Problem 7.2 DEBRA LOOKS AT A SOFTWARE ISSUE

LG 2 LG 3 LG 5 Debra Wise is a young career woman; she lives in Perth, where she owns and operates a highly successful modelling agency. Debra manages her modest but rapidly growing investment portfolio, made up mostly of high-grade shares. Because she's young and single and has no pressing family requirements, Debra has invested primarily in shares that offer the potential for attractive capital gains. Her stockbroker recently recommended a computer software company and sent her some literature and analytical reports to study. Among the reports was one prepared by the stockbroking firm she deals with; it provided an up-to-date look at the economy, an extensive study of the computer software industry, and an equally extensive review of several computer software companies (including the one her stockbroker recommended). Debra feels strongly about the merits of security analysis and believes it is important to spend time studying a company before making an investment decision.

QUESTIONS

1. Debra tries to stay informed about the economy on a regular basis. At the present time, most economists agree that the economy, now well into the third year of a recovery, is healthy, with industrial activity remaining strong. What other information about the economy do you think Debra would find helpful in evaluating a computer software company? Prepare a list—and be specific. Which three items of economic information (from your list) do you feel are most important? Explain.
2. In relation to a study of the computer software industry, briefly note the importance of each of the following.
   a. Competition from overseas and the Internet
   b. Export markets
   c. The rate of technological change
   d. The price of computer hardware
3. A variety of financial ratios and measures are provided about one of the computer software companies. These are incomplete, however, so some additional information will have to be calculated. Specifically, we know:

Net profit margin	15%
Total assets	$25 billion
Earnings per share	$0.30
Total asset turnover	1.5
Net working capital	$3.4 billion
Payout ratio	40%
Current liabilities	$5 billion
Price/earnings ratio	12.5

Given this information, calculate:
   a. Sales
   b. Net profits after taxes
   c. Current ratio
   d. Market price of a share
   e. Dividend yield

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Excel with Spreadsheets

You have been asked to analyse the financial statements of Dayton Pty Ltd for the two years ending 2009 and 2010.

	A	B	C	D	E
1	**Dayton Pty Ltd**				
2	**Financial Data**				
3		2009	2010		
4	Net sales	47 715	40 363		
5	Cost sales	27 842	21 485		
6	SG& A expenses	8 090	7 708		
7	Depreciation expense	628	555		
8	Interest expense	754	792		
9	Tax expense	3 120	3 002		
10	Cash & equivalents	2 144	2 536		
11	Accounts receivable	5 215	5 017		
12	Inventory	3 579	3 021		
13	Other current assets	2 022	2 777		
14	Plant & equipment	18 956	16 707		
15	Accumulated depreciation	5 853	5 225		
16	Intangible assets	7 746	7 374		
17	Other non-current assets	10 465	7 700		
18	Payables	5 108	4 361		
19	Short-term notes payable	4 066	3 319		
20	Other current liabilities	2 369	2 029		
21	Long-term debt	4 798	3 600		
22	Other non-current liabilities	4 837	5 020		
23	**Ordinary shares**	6 776	6 746		
24	Retained earnings	16 050	14 832		
25	**Ordinary shares outstanding**	2 300	2 300		
26	Current market price of shares	$45	$45		

Questions

1. Create a comparative balance sheet for the years 2010 and 2009, similar to the spreadsheet for Table 7.3, which can be viewed at www.pearson.com.au/www.myfinancelab.com or www.pearson.com.au/9781442532885.

2. Create a comparative income statement for the years 2010 and 2009, similar to the spreadsheet for Table 7.4, which can be viewed at www.pearson.com.au/www.myfinancelab.com or www.pearson.com.au/9781442532885.

3. **Create a spreadsheet** to calculate the listed financial ratios for both 2010 and 2009, similar to the spreadsheet for Table 7.6, which can be viewed at www.pearson.com.au/www.myfinancelab.com or www.pearson.com.au/9781442532885.

Ratios	2009	2010
Current ratio		
Quick ratio		
Accounts receivable turnover		
Inventory turnover		
Total asset turnover		
Debt–equity ratio		
Times interest earned		
Net profit margin		
Return on equity (ROE)		
Earnings per share		
Price/earnings ratio		
Book value per share		
Price-to-book-value		

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The value of a share is affected by more than the fundamental financial condition and operating results of the issuing company. Companies operate as part of a larger industry and as an even smaller part of the economy. Factors or trends that affect the company's industry or the economy at large are reflected in the asset's value (its price). This chapter presented the types of economic and industry information needed for thorough security analysis. If, as the saying goes, the language of business is accounting, then the language of investments is ratios. Ratios encapsulate the meaning in what would otherwise be just a bunch of formally organised numbers. Information for economic, and company-specific, analysis is available from this textbook's home page, from the following sources. These sites contain statistics and up-to-date commentaries on the Australian economy, and data on recent industry and individual company performances.

WEBSITE	URL
Australian Bureau of Statistics	www.abs.gov.au/Ausstats
Australian Securities Exchange	www.asx.com.au
Department of Finance and Deregulation	www.finance.gov.au
Department of Treasury	www.treasury.gov.au
Reserve Bank of Australia	www.rba.gov.au/publications

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER 8

Share Valuation

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Explain the role that a company's future plays in the share valuation process.
- LG2 Develop a forecast of a share's expected cash flow, starting with corporate sales and earnings, and then moving to expected dividends and share price.
- LG3 Discuss the concepts of intrinsic value and required rates of return, and note how they are used.
- LG4 Determine the underlying value of a share using the zero-growth, constant-growth and variable-growth dividend valuation models.
- LG5 Use other types of present-value–based models to derive the value of a share, as well as alternative price-relative procedures.
- LG6 Gain a basic appreciation of the procedures used to value different types of shares, from traditional dividend-paying shares to more growth-oriented shares.

What drives a share's value? Many factors come into play, including how much profit the company earns, how its new products fare in the marketplace, the overall state of the economy and what investors believe about the company's future.

Chemicals and explosives company, Orica (ORI), has transformed itself in the past decade. Several divisions have been sold and others restructured in a process of continual change which has fed into potential for growth. Orica is now by far the largest listed non-construction services provider to the resources sector in Australia. Its four divisions include explosives for the mining industry, chemicals and materials for the mining industry, chemicals and paint.

The mining sector is now the dominant driver of its growth, and earnings and underlying profit have risen in an unbroken line since 2001. Earnings per share rose at 14% a year (compound) between 2000 and 2009. Dividend growth was 12%. That's some record for a company that entered the new century recognised as a leader but perceived by the market as mature and with little sustainability of earnings growth.

And its shareholders agree: at the end of 2000, its shares were trading at $5.73. By 2010 their price was almost five times this value, at over $25.00.

How do you determine a share's true value? This chapter explains how to determine a share's intrinsic value by using dividend valuation, dividend and earnings, price/earnings and other models.

(*Source:* Graeme Adamson 2010, 'Explosive Development', *Smart Investor*, March, pp. 60–2.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Valuation: Obtaining a Standard of Performance

LG1 LG2 LG3

share valuation
the process by which the underlying value of a share is established on the basis of its forecasted risk and return performance.

Obtaining a performance estimate of a share's intrinsic value that can be used to judge the investment merits of a share is the underlying purpose of **share valuation**. Investors attempt to resolve the question of whether and to what extent a share is under- or over-valued by comparing its current market price to its intrinsic value. At any given time, the price of a share depends on investor expectations about the future behaviour of the security. If the outlook for the company and its shares are good, the price will probably be bid up. If conditions deteriorate, the price of the shares will probably go down. Let's look now at the single most important issue in the share valuation process: *the future*.

Valuing a Company and Its Future

Thus far, we have examined several aspects of security analysis: macroeconomic factors, industry factors and company-specific factors. But as we've said, it's *not the past* that's important but *the future*. The primary reason for looking at past performance is to gain insight into the future direction of the company. Although past performance provides no guarantees about future returns, it can give us a good idea of a company's strengths and weaknesses. For example, it can tell us how well the company's products have done in the marketplace, how the company's fiscal health shapes up, and how management tends to respond to difficult situations. In short, the past can reveal how well the company is positioned to take advantage of the things that may occur in the future.

Because *the value of a share is a function of its future returns*, the investor's task is to use available historical data to project key financial variables into the future. In this way, you can assess the future prospects of the company and the expected returns from its shares.

Forecasted Sales and Profits The key to our forecast is, of course, the future behaviour of the *company*, and the most important aspects to consider in this regard are the outlook for sales and profits. One way to develop a sales forecast is to assume that the company will continue to perform as it has in the past and simply extend the historical trend. For example, if a company's sales have been growing at a rate of 10% per year, then assume they will continue to grow at that rate. Of course, if there is some evidence about the economy, industry or company that suggests a faster or slower rate of growth, you would want to adjust the forecast accordingly. Often, this 'naive' approach will be about as effective as more complex techniques.

Once the sales forecast has been generated, we can shift our attention to the net profit margin. We want to know what profit the company will earn on the level of sales that it achieves. One of the best ways of doing this is to use what is known as a **common-size income statement**. Basically, a common-size statement takes every entry found on a normal dollar-based financial statement and converts it to a percentage. For a common-size income statement, every item on the statement is divided by *net sales*—which, in effect, is the common denominator. An example of this can be seen in Table 8.1, which shows the 2010 dollar-based and common-size income statements for Universal Office Furnishings. (This is the same income statement that we first saw in Table 7.4).

common-size income statement
a type of financial report that uses a common denominator (net sales) to convert all entries on a normal income statement from dollars to percentages.

To understand how these statements are constructed, let's use the *gross profit margin* (of 41.8%) as an illustration. In this case, the *gross operating profit* of $809.5 million was divided by *net sales* of $1938.0 million; thus: $809.5 ÷ $1938.0 = 0.4177 = 41.8%. Using net sales of $1938.0 million, the same procedure was used for every other entry on the income statement. Note that a common-size statement adds up, just like its

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 8.1 Comparative Dollar-Based and Common-Size Income Statements
Universal Office Furnishings, 2010 Income Statements

EXCEL With Spreadsheets

	$ (in millions)	% (Common-Size)*
Net sales	$1938.0	100.0%
Cost of goods sold	1128.5	58.2
Gross profit	$ 809.5	41.8%
Selling, general, administrative and other operating expenses	$ 496.7	25.6%
Depreciation & amortisation	77.1	4.0
Other expenses	0.5	0.1
Total operating expenses	$ 574.3	29.7%
Earnings before interest & taxes (EBIT)	$ 235.2	12.1%
Interest expense	$ 13.4	0.7%
Income taxes	$ 82.1	4.2%
Net profit after taxes	$ 139.7	7.2%

*Common-size figures are found by using 'Net Sales' as the common denominator, and then dividing all entries by net sales. For example, cost of goods sold = $1128.5 ÷ $1938.0 = 58.2%; EBIT = $235.2 ÷ $1938.0 = 12.1%.

dollar-based counterpart. For example, net sales of 100.0% minus costs of goods sold of 58.2% equals a gross operating profit margin of 41.8%. (You can also work up common-size balance sheets, using total assets as the common denominator, but they are not nearly as popular or as widely used as common-size income statements.)

Comparative common-size income statements are very popular with credit and securities analysts. They enable the users to compare operating results from one year to the next and, in so doing, to quickly determine what's causing, say, gross or operating profit margins to improve or deteriorate. In essence, they let the analyst know how good a job management is doing in controlling the company's cost structure and what's driving the company's profit margins. For our purposes, we can use this statement to help us get a handle on the company's *forecasted net profit margin* (the bottom line of the common-size income statement). Starting with the latest common-size statement (or perhaps an average of the statements that have prevailed for the past few years), we can work our way down the statement, adjusting any of the entries for likely industry or company developments. For example, if cost of goods sold is expected to fall, we might raise the gross profit margin by, say, half a percentage point. In this way, we will (hopefully) end up with a good idea of what the future net profit margin should look like. Most individual investors can obtain valuable insight about future revenues, costs and earnings from industry or company reports put out by brokerage houses, advisory services (e.g. Huntley's, CommSec), the financial media (e.g. *Australian Financial Review*) and from various investor websites.

Given a satisfactory sales forecast and estimate of the future net profit margin, we can combine these two pieces of information to arrive at future earnings.

Equation 8.1

$$\text{Future after-tax earnings in year } t = \text{Estimated sales for year } t \times \text{Net profit margin expected in year } t$$

The *year t* notation in this equation simply denotes a given calendar or fiscal year in the future. It can be next year, the year after that, or any other year in which we are interested. Let's say that in the year just completed, a company reported sales of $100 million, we

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

estimate that revenues will grow at an 8% annual rate, and the net profit margin should be about 6%. Thus, estimated sales next year will equal $108 million ($100 million × 1.08). And, with a 6% profit margin, we should expect to see earnings next year of

$$\text{Future after-tax earnings next year} = \$108 \text{ million} \times 0.06 = \underline{\$6.5 \text{ million}}$$

Using this same process, we would then estimate sales and earnings *for other years* in our forecast period.

Forecasted Dividends and Prices At this point we have an idea of the future earnings performance of the company. We are now ready to evaluate the effects of this performance on returns to shareholders. Given a corporate earnings forecast, we need three additional pieces of information:

- An estimate of future dividend payout ratios
- The number of shares that will be outstanding over the forecast period
- A future price/earnings (P/E) ratio

For the first two pieces of information, unless we have evidence to the contrary, we can simply project the company's recent experience into the future. Payout ratios are usually fairly stable, so there is little risk in using a recent average figure. (Or, if a company follows a fixed-dividend policy, we could use the latest dividend rate in our forecast.) It is also generally safe to assume that the number of shares outstanding will hold at the latest level or perhaps change at some moderate rate of increase (or decrease) that's reflective of the recent past.

Getting a Handle on the P/E Ratio The only really thorny issue in this process is coming up with an estimate of the future P/E ratio—a figure that has considerable bearing on the share's future price behaviour. Generally speaking, the P/E ratio is a function of several variables, including the following:

- The growth rate in earnings
- The general state of the market
- The amount of debt in a company's capital structure
- The current and projected rate of inflation
- The level of dividends

As a rule, higher P/E ratios can be expected with higher rates of growth in earnings, an optimistic market outlook, and lower debt levels (less debt means less financial risk).

The link between the inflation rate and P/E multiples, however, is a bit more complex. Generally speaking, as inflation rates rise, so do bond interest rates. This, in turn, causes required returns on shares to rise (so share returns will remain competitive with bond returns), and higher required returns on shares mean lower share prices and lower P/E multiples. On the other hand, declining inflation (and interest) rates normally have positive effects on the economy and business conditions, and that translates into higher P/E ratios and share prices. We can also argue that a high P/E ratio should be expected with high dividend payouts. In practice, however, most companies with high P/E ratios have *low dividend payouts*. The reason: earnings growth tends to be more valuable than dividends, especially in companies with high rates of return on equity.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

A Relative Price/Earnings Multiple A useful starting point for evaluating the P/E ratio is the *average market multiple*. This is simply the average P/E ratio of all the shares in a given market index, like the S&P ASX 200. The average market multiple indicates the general state of the market. It gives us an idea of how aggressively the market, in general, is pricing shares. Other things being equal, the higher the P/E ratio, the more optimistic the market—*unless, of course, the economy is in a slump, in which case a high P/E could simply be the result of lower earnings*. Figure 8.1 plots the ASX price/earnings multiple from 1996 to 2009. It shows that market multiples tend to move over a fairly wide range.

Looking at Figure 8.1, you can see that the Australian market's P/E ratio remained steady between 15 and 20 for most of the decade from 1996 to 2006. The recent fall and spike is explained in Figure 8.1 as the result of the global financial crisis.

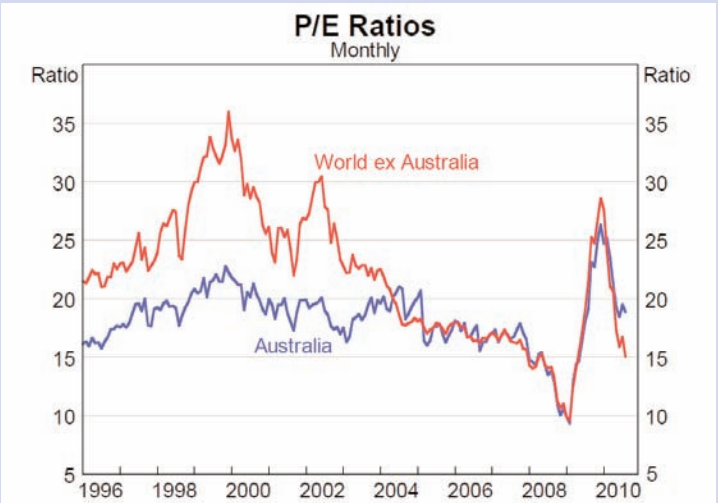
relative P/E multiple
the measure of how a share's P/E behaves relative to the average market multiple.

With the market multiple as a benchmark, you can evaluate a share's P/E performance relative to the market. That is, you can calculate a **relative P/E multiple** by dividing a share's P/E by a market multiple. For example, if a share currently has a P/E of 35 and the market multiple for the S&P ASX 200 is, say, 25, the share's relative P/E is 35/25 = 1.40. Looking at the relative P/E, you can quickly get a feel for how aggressively the share has been priced in the market and what kind of relative P/E is normal for the share.

Other things being equal, a high relative P/E is desirable—up to a point, at least. For just as *abnormally* high P/Es can spell trouble (i.e. the share may be overpriced and headed for a fall), so too can *abnormally* high *relative P/Es*. Given that caveat, it follows that the higher the relative P/E measure, the higher the share will be priced in

FIGURE 8.1 Average P/E Ratios: Australia, the World

The average price/earnings ratio for Australian shares was between 15 and 20 in the decade between 1996 and 2006. While P/E ratios in the rest of the world were higher for much of this period, the two series have converged since 2004. The drop in 2007/08 was due to falling share prices associated with the global financial crisis. The subsequent recovery and spiking in P/E ratios was a joint result of lower earnings in 2009/10 and a return of market confidence, which boosted share prices.



(*Source:* Data from MSCI and Thomson Reuters. © Reserve Bank of Australia, 2001–2010. All rights reserved.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

the market. But watch out for the downside: high relative P/E multiples can also mean a lot of price volatility and, as noted above, the potential for a lot of downside risk. (Similarly, we can use average *industry* multiples to get a feel for the kind of P/E multiples that are standard for a given industry. We can then use that information, along with market multiples, to assess or project the P/E for a particular share.)

Now we can generate a forecast of what the share's *future* P/E will be over the anticipated *investment horizon* (the period of time over which we expect to hold the share). For example, with the existing P/E multiple as a base, an *increase* might be justified if you believe the *market multiple* will increase (as the market becomes more bullish), and the *relative P/E* is likely to remain at its current level, or may even increase.

Estimating Earnings per Share So far we've been able to come up with an estimate for the dividend payout ratio, the number of shares outstanding, and the price/earnings multiple. We're now ready to forecast the share's future earnings per share (EPS), which can be done as follows:

Equation 8.2

$$\text{Estimated EPS in year } t = \frac{\text{Future after-tax earnings in year } t}{\text{Number of shares outstanding in year } t}$$

Earnings per share is a critical part of the valuation process, for once you have the EPS, you can combine it with (1) the dividend payout ratio to obtain (future) dividends per share and (2) the price/earnings multiple to project the (future) price of the shares.

Equation 8.2 simply converts aggregate or total corporate earnings to a per-share basis, by relating company (forecasted) profits to the expected number of shares outstanding. Although this approach works quite effectively, some investors would rather bypass the projection of aggregate sales and earnings and instead *concentrate on earnings from a per-share basis right from the start*. That can be done by looking at the major forces that drive earnings per share: ROE and book value. Quite simply, by using these two variables, we can define earnings per share as follows:

Equation 8.3

$$\text{EPS} = \text{ROE} \times \text{Book value per share}$$

This formula will produce the same results as the standard EPS equation shown first in Chapter 6 (Equation 6.1, on page 184) and applied in Chapter 7 on page 231. The major advantage of this form of the equation is that it allows you to assess the extent to which EPS is influenced by the company's book value and (especially) its ROE. As we saw in the previous chapter, ROE is a key financial measure, because it captures the amount of success that the company is having in managing its assets, operations and capital structure. And as we see here, ROE not only is important in defining overall corporate profitability but it also plays a crucial role in defining a share's EPS.

To produce an estimated EPS using Equation 8.3, you would go directly to the two basic components of the formula and try to get a handle on their future behaviour. In particular, what kind of growth is expected in the company's book value per share, and what's likely to happen to the company's ROE? In the vast majority of cases, ROE is really the driving force, so it's important to produce a good estimate of that variable. Investors often do this by breaking ROE into its component parts—net profit margin, total asset turnover and the equity multiplier (see Equation 7.13, on page 230).

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Once you have projected ROE and book value per share, you can plug these figures into Equation 8.3 to produce estimated EPS. The bottom line is that, one way or another (using the approach reflected in Equation 8.2 or that in Equation 8.3), you have to arrive at a forecasted EPS number that you are comfortable with. When you've done that, it's a pretty simple matter to use the forecasted payout ratio to estimate dividends per share:

Equation 8.4

$$\text{Estimated dividends per share in year } t = \text{Estimated EPS for year } t \times \text{Estimated payout ratio}$$

And then the future price of the share, which can be determined as:

Equation 8.5

$$\text{Estimated share price at end of year } t = \text{Estimated EPS in year } t \times \text{Estimated P/E ratio}$$

Pulling It All Together We've seen the various components that go into our estimates of future dividends and share prices. Now, to see how they all fit together, let's continue with the example we started above. Using the aggregate sales and earnings approach, if the company had 2 million shares outstanding and that number was expected to hold in the future, then given the estimated earnings of $6.5 million that we computed earlier, the firm should generate earnings per share (EPS) next year of:

target price
the price that an analyst expects a share to reach within a certain period of time (usually a year).

$$\text{Estimated EPS next year} = \frac{\$6.5 \text{ million}}{2 \text{ million}} = \underline{\underline{\$3.25}}$$

This result, of course, would be equivalent to the firm having a projected ROE of, say, 15% and an estimated book value per share of $21.67. According to Equation 8.3, those conditions would also produce an estimated EPS of $3.25 (i.e. 0.15 × $21.67). Using this EPS figure, along with an estimated payout ratio of 40%, we see that dividends per share next year should equal:

$$\text{Estimated dividends per share next year} = \$3.25 \times 0.40 = \underline{\underline{\$1.30}}$$

If the company adheres to a *fixed-dividend policy*, this estimate may have to be adjusted to reflect the level of dividends being paid. For example, if the company has been paying annual dividends at the rate of $1.25 per share *and is expected to continue doing so for the near future*, then you would adjust estimated dividends accordingly (i.e. use $1.25/share). Finally, if it has been estimated that the share should sell at 17.5 times earnings, then a share in this company should be trading at $56.88 by the *end* of next year.

$$\text{Estimated share price at the end of next year} = \$3.25 \times 17.5 = \underline{\underline{\$56.88}}$$

Actually, we are interested in the price of the share at the end of our anticipated investment horizon. Thus, the $56.88 figure would be appropriate if we had a one-year horizon. However, if we had a three-year holding period, we would have to extend the EPS figure for two more years and repeat our calculations with the new data. As we shall see, *the estimated share price is important because it has embedded in it the capital gains portion of the share's total return.*

INVESTOR FACTS

TARGET PRICES—A **target price** is the price an analyst expects a share to reach within a certain period of time (usually a year). Target prices are normally based on an analyst's forecast of a company's sales, earnings and other criteria, some of which are highly subjective. One common practice is to assume that a share should trade at a certain price/earnings multiple—say, on par with the average P/E multiples of similar shares—and arrive at a target price by multiplying that P/E ratio by an estimate of what the EPS will be one year from now. Use these prices with care, however, because analysts will often raise their targets simply because a share has reached the targeted price much sooner than expected.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Developing an Estimate of Future Behaviour

Using information obtained from Universal Office Furnishings (UVRS), we can illustrate the forecasting procedures we discussed above. Recall from Chapter 7 that an assessment of the economy and the office equipment industry was positive and that the company's operating results and financial condition looked strong, both historically and relative to industry standards. Because everything looks favourable for Universal, we decide to take a look at the future prospects of the company and its shares.

Assume we have chosen a three-year investment horizon because we believe (from earlier studies of economic and industry factors) that the economy and the market for office equipment shares will start running out of steam near the end of 2013 or early 2014. (Some investors prefer to use one-year investment horizons, because they believe that trying to forecast out any further involves too many uncertainties. We use a three-year investment horizon here primarily for illustration—and because we feel comfortable forecasting the numbers out that far. Should that not be the case, then by all means use a shorter investment horizon.)

Table 8.2 provides selected historical financial data for the company, covering a five-year period (ending with the latest fiscal year) and provides the basis for much of our forecast. The data reveal that, with one or two exceptions, the company has performed at a fairly steady pace and has been able to maintain a very attractive rate of growth. Our economic analysis suggests that the economy is about to pick up, and our research (from Chapter 7) indicates that the industry and company are well situated to take advantage of the upswing. Therefore, we conclude that the rate of growth in sales should pick up dramatically from the abnormally low level of 2010, attaining a growth rate of over 20% in 2011—more in line with the firm's five-year average. After a modest amount of pent-up demand is worked off, the rate of growth in sales should drop to about 19% in 2012 and to 15% in 2013.

The essential elements of the financial forecast for 2011–2013 are provided in Table 8.3. Highlights of the key assumptions and the reasoning behind them are as follows:

- *Net profit margin*. Various published industry and company reports suggest a comfortable improvement in earnings, so we decide to use a profit margin of 8.0% in 2011 (up a bit from the latest margin of 7.2% recorded in 2010). We're projecting even better profit margins (8.5%) in 2012 and 2013, as some cost improvements start to take hold.

TABLE 8.2 Selected Historical Financial Data, Universal Office Furnishings

	2006	2007	2008	2009	2010
Total assets (millions)	$554.2	$694.9	$755.6	$761.5	$941.2
Total asset turnover	1.72×	1.85×	1.98×	2.32×	2.06×
Net sales (millions)	$953.2	$1283.9	$1495.9	$1766.2	$1938.0
Annual rate of growth in sales*	11.5%	34.7%	16.5%	18.1%	9.7%
Net profit margin	4.2%	3.6%	5.0%	8.0%	7.2%
Payout ratio	6.8%	5.6%	5.8%	6.0%	6.6%
Price/earnings ratio	13.5×	21.7×	14.9×	15.7×	18.4×
Number of shares outstanding (millions)	77.7	78.0	72.8	65.3	61.8

*Annual rate of growth in sales = Change in sales from one year to the next ÷ Level of sales in the base (or earliest) years. For 2007, the annual rate of growth in sales equalled 34.7% = (2007 sales − 2006 sales) ÷ 2006 sales = ($1283.9 − $953.2) ÷ $953.2 = 0.3469.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 8.3 Summary Forecast Statistics, Universal Office Furnishings

EXCEL With Spreadsheets

	Latest Actual Figure (Fiscal 2010)	Average for the Past Five Years (2006–2010)	Forecasted Figures 2011	2012	2013
Annual rate of growth in sales	9.7%	18.1%	22%	19%	15%
Net sales (millions)	$1938.0	N/A*	$2364.4**	$2813.6**	$3235.6**
× Net profit margin	7.2%	5.6%	8.0%	8.5%	8.5%
= Net after-tax earnings (millions)	$ 139.7	N/A	$ 189.2	$ 239.2	$ 275.0
÷ Shares outstanding (millions)	61.8	71.1	61.5	60.5	59.0
= Earnings per share	$ 2.26	N/A	$ 3.08	$ 3.95	$ 4.66
× Payout ratio	6.6%	6.2%	6.0%	6.0%	6.0%
= Dividends per share	$ 0.15	$ 0.08	$ 0.18	$ 0.24	$ 0.28
Earnings per share	$ 2.26	N/A	$ 3.08	$ 3.95	$ 4.66
× P/E ratio	18.4	16.8	20	19	20
= Share price at year end	$ 41.58	N/A	$ 61.60	$ 75.00	$ 93.20

*N/A: Not applicable.

**Forecasted sales figures: Sales from *preceding* year × Growth rate in sales = Growth in sales; then Growth in sales + Sales from preceding year = Forecast sales for the year. For example, for 2011: $1938.0 × 0.22 = $426.4 + $1938.0 = $2364.4.

- *Shares outstanding*. We believe the company will continue to pursue its share buyback program, but at a substantially lower pace than in the 2007–2010 period. From a current level of 61.8 million shares, we project that the number of shares outstanding will drop to 61.5 million in 2011, to 60.5 million in 2012, and to 59.0 million in 2013.
- *Payout ratio*. We assume that the dividend payout ratio will hold at a steady 6% of earnings, as it has for most of the recent past.
- *P/E ratio*. Primarily on the basis of expectations for improved growth in revenues and earnings, we are projecting a P/E multiple that will rise from its present level of 18.4 times earnings to roughly 20 times earnings in 2011. Although this is a fairly conservative increase in the P/E ratio, when it is coupled with the hefty growth in EPS, the net effect will be a big jump in the projected price of Universal shares.

Table 8.3 also shows the sequence involved in arriving at forecasted dividends and share price behaviour; that is:

1. The company dimensions of the forecast are handled first. These include sales and revenue estimates, net profit margins, net earnings and the number of shares outstanding. Note that after-tax earnings are derived according to the procedure described earlier in this chapter.
2. Next we estimate earnings per share, following the procedures established earlier.
3. The bottom line of the forecast is, of course, the returns in the form of dividends and capital gains expected from Universal shares, given that the assumptions about net sales, profit margins, earnings per share and so forth hold up. We see in Table 8.3 that dividends should go up to 28 cents a share, which is a big jump from where they are now (15 cents/share). Even so, with annual dividends of less

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

than 30¢ per share, it's clear that dividends still won't account for much of the share's return. In fact, the dividend yield in 2013 is projected to *fall* to just 0.3%. Clearly, the returns from this share are going to come from capital gains, not dividends. That's obvious when you look at year-end share prices, which are expected to more than double over the next three years. That is, if our projections are valid, the price of a share should rise from around $41.50 to over $93.00 by year-end 2013.

As we now have an idea of what the future cash flows of the investment are likely to be, we can use that information to establish an intrinsic value for Universal Office Furnishings shares.

The Valuation Process

valuation
a process by which an investor uses risk and return concepts to determine the worth of a security.

Valuation is a process by which an investor determines the worth of a security using the risk and return concepts introduced in Chapters 4 and 5. This process can be applied to any asset that produces a stream of cash flow—a share, a bond, a piece of real estate or an oil well. To establish the value of an asset, the investor must determine certain key inputs, including the *amount* of future cash flows, the *timing* of these cash flows and the *rate of return required* on the investment.

In terms of shares, the essence of valuation is to determine what the share *ought to be worth*, given estimated returns to shareholders (future dividends and price behaviour) and the amount of potential risk exposure. Towards that end we employ various types of share valuation models, the end product of which represents the elusive intrinsic value we have been seeking. That is, the share valuation models determine either an *expected rate of return* or the *intrinsic worth of a share*, which in effect represents the share's 'justified price'. In this way, we obtain a standard of performance, based on forecasted share behaviour, which can be used to judge the investment merits of a particular security.

Either of two conditions would make us consider a share a worthwhile investment candidate: (1) if the computed rate of return equals or exceeds the yield we feel is warranted, or (2) if the justified price (intrinsic worth) is equal to or greater than the current market price. Note that a security is considered acceptable even if its yield simply *equals* the required rate of return or if its intrinsic value simply *equals* the current market price of the share. There is nothing irrational about such behaviour. In either case, the security meets your minimum standards to the extent that it is giving you the rate of return you wanted.

Remember this, however, about the valuation process: even though valuation plays an important part in the investment process, there is *absolutely no assurance* that the actual outcome will be even remotely similar to the forecasted behaviour. The share is still subject to economic, industry, company and market risks, any one of which could negate *all* your assumptions about the future. Security analysis and share valuation models are used not to guarantee success but to *help you better understand the return and risk dimensions of a potential transaction*.

required rate of return
the return necessary to compensate an investor for the risk involved in an investment.

Required Rate of Return One of the key ingredients in the share valuation process is the **required rate of return**. Generally speaking, the amount of return required by an investor should be related to the level of risk that must be assumed to generate that return. In essence, the required return establishes a level of compensation compatible with the amount of risk involved. Such a standard helps you determine whether the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

expected return on a share (or any other security) is satisfactory. Because you don't know for sure what the cash flow of an investment will be, you should expect to earn a rate of return that reflects this uncertainty. Thus, the greater the perceived risk, the more you should expect to earn. As we saw in Chapter 5, this is basically the notion behind the *capital asset pricing model* (CAPM).

Recall that using the CAPM, we can define a share's required return as:

Equation 8.6

$$\text{Required rate of return} = \text{Risk-free rate} + \left[\text{Share's beta} \times \left(\text{Market return} - \text{Risk-free rate}\right)\right]$$

The required inputs for this equation are readily available. You can obtain a share's beta from the ASX. The risk-free rate is basically the return on government bonds, and a good proxy for the market return is the long-run average return on the sharemarket. This average return may, of course, have to be adjusted up or down a bit based on what you expect the market to do over the next year or so.

In the CAPM, the risk of a share is captured by its beta. For that reason, the required return on a share increases (or decreases) with increases (or decreases) in its beta. As an illustration of the CAPM at work, consider Universal's shares, which we'll assume have a beta of 1.30. Given that the risk-free rate is 5.5% and the expected market return is, say, 15%, according to the CAPM model, this share would have a required return of:

$$\text{Required return} = 5.5\% + [1.30 \times (15.0\% - 5.5\%)] = \underline{\underline{17.85\%}}$$

This return—let's round it to 18%—can now be used in a share valuation model to assess the investment merits of a share.

As an alternative, or perhaps even *in conjunction with the CAPM*, you could take a more subjective approach to finding the required return. For example, if your assessment of the historical performance of the company had uncovered some volatility in sales and earnings, you could conclude that the share is subject to a good deal of business risk. Also important is market risk, as measured by a share's beta. A valuable reference point in arriving at a measure of risk is the rate of return available on less risky but competitive investment vehicles. Thus, you could *use the rate of return on long-term government bonds or high-grade corporate issues* as a starting point in defining your desired rate of return. That is, starting with yields on long-term bonds, you could adjust those returns for the levels of business and market risk to which you believe the share is exposed.

To see how these elements make up the desired rate of return, let's go back to Universal Office Furnishings. Assume that it is now early 2011 and rates on high-grade corporate bonds are hovering around 9%. Given that our analysis thus far has indicated that the office equipment industry in general, and Universal in particular, is subject to a 'fair' amount of business risk, we would want to adjust that figure upwards—probably by around 2 or 3 points. In addition, with its beta of 1.30, we can conclude that the share carries a good deal of market risk. Thus, we should increase our base rate of return even more—say, by another 4 or 5 points. That is, starting from a base (high-grade corporate bond) rate of 9%, we tack on, say, 3% for the company's added business risk and another 4.5 or 5% for the share's market risk. Adding these up, we find that an appropriate required rate of return for Universal's shares is around 17% or

INVESTOR FACTS

HOW TO SPOT AN UNDERVALUED (OR OVERVALUED) MARKET—Just as shares can become over- or undervalued, so can the market as a whole. How can you tell if the market is overvalued? Some market observers suggest you look at comparative yields. That is, compare the so-called *earnings yield on shares* with the yields on 10-year bonds. The earnings yield on shares is the inverse of the market's P/E ratio—if the market's P/E ratio is 18 times earnings, the earnings yield would be 5.56% (1/18). If the earnings yield is *above* the yield on 10-year bonds, shares are *undervalued* (cheap), especially compared to bonds. In contrast, you'd normally expect the earnings yield on shares to be *less than* 10-year Treasury yields; as that spread continues to widen, the market is becoming more and more *overvalued*—definitely not a good thing.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

17.5%. This figure is reasonably close to what we would obtain with CAPM using a beta of 1.30, a risk-free rate of 5.5% and an expected market return of 15% (as in Equation 8.6). The fact that the two numbers are close shouldn't be surprising. If they're carefully (and honestly) done, the CAPM and the subjective approach should yield similar results. Whichever procedure you use, the required rate of return stipulates the minimum return you should expect to receive from an investment. To accept anything less means you'll fail to be fully compensated for the risk you must assume.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

8.1 What is the purpose of share valuation? What role does *intrinsic value* play in the share valuation process?

8.2 Are the expected future earnings of the company important in determining a share's investment suitability? Discuss how these and other future estimates fit into the share valuation framework.

8.3 Can the growth prospects of a company affect its price/earnings multiple? Explain. How about the amount of debt a firm uses? Are there any other variables that affect the level of a firm's P/E ratio?

8.4 What is the *market multiple* and how can it help in evaluating a share's P/E ratio? Is a share's *relative P/E* the same thing as the market multiple? Explain.

8.5 In the share valuation framework, how can you tell whether a particular security is a worthwhile investment candidate? What roles does the required rate of return play in this process? Would you invest in a share if all you could earn was a rate of return that just equalled your required return? Explain.

Share Valuation Models

LG4 LG5 LG6

Investors employ a number of different types of share valuation models. Although they may all be aimed at a security's future cash benefits, their approaches to valuation are nonetheless considerably different. Some investors, for example, search for value in a company's financials—by keying in on such factors as book value, debt load, return on equity and cash flow. These so-called *value investors* rely as much on historical performance as on earnings projections to identify undervalued shares. Then there are the *growth investors*, who concentrate primarily on growth in earnings. To them, though past growth is important, the real key lies in projected earnings—in finding companies that will produce big earnings, along with big P/E multiples.

There are still other share valuation models in use—models that employ such variables as dividend yield, abnormally low P/E multiples, relative price performance over time, and even company size or market cap as key elements in the decision-making process. For purposes of our discussion, we'll focus on several share valuation models that derive value from the fundamental performance of the company. We'll look first at shares that pay dividends and at a procedure known as the dividend valuation model. From there, we'll look at several valuation procedures that can be used with companies that pay little or nothing in dividends. Finally, we'll move on to procedures that set the price of a share based on how it behaves relative to earnings, cash flow, sales or book value. The share valuation procedures that we'll examine in this chapter are the same as those used by many professional security analysts, and are, in fact, found throughout the 'Equity Investments' portion of the CFA exam, especially at Level 1. And, of course, as more fully discussed in the *Ethics in Investing* box on page 260, an understanding of these valuation models will enable you to better evaluate analysts' recommendations.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

ETHICS IN INVESTING

Share Analysts: Don't Always Believe the Hype

Buy, sell or hold? Unfortunately, many investors have learned the hard way not to trust these recommendations.

Consider the late 1990s sharemarket bubble. As the market began to fall in 2000, 95% of all publicly traded shares were free of any sell recommendations, according to investment research firm Zacks, and 5% of shares that did have a sell rating had exactly that: a sell rating from a *single* analyst. When the market began its climb back up, analysts missed the boat again: from 2000 to 2004, shares that analysts told investors to sell rose 19% per annum on average, while their 'buys' and 'holds' rose just 7%.

Why were the all-star analysts wrong so often? Conflict of interest is one explanation. Analysts are handsomely rewarded for generating investment banking business. They often felt pressure to make positive comments to please current or prospective investment banking clients. Also, analysts are expected to generate commissions for their firms by making buy and sell recommendations.

Legislation has been introduced in many countries requiring companies to publicly release the same information that they share with analysts, thus breaking the cosy reciprocal relationship of favours. In the United States, the Securities Exchange Commission has introduced Regulation Fair Disclosure, which requires all company information to be released to the public rather than quietly disseminated to analysts. In Australia, the Australian Securities Exchange has introduced Continuous Disclosure, by which all information that might be reasonably expected to have a material effect on the price of the company's shares must be immediately reported to the ASX.

However legislation can never completely protect investors.

Investors must learn how to read between the lines of analysts' reports. To start, they should probably lower analysts' ratings by one notch. A strong buy could be interpreted as a buy, a buy as a hold, and a hold or neutral as a sell. Also, investors should give more weight to negative ratings than to positive ones: downgrades and those rare sell recommendations may signal future problems. Investors should also pay attention to downward revisions of earnings estimates; bad news often gets worse as changing business conditions spread beyond individual companies. Finally, when in doubt, investors should do their own homework, using the techniques taught in this book.

Critical Thinking Question Do you agree with the policies forbidding analysts to own shares of the companies they cover?

(*Source:* Adapted from Rich Smith 2006, Analysts Running Scared, *The Motley Fool*, 5 April <www.fool.com>.)

The Dividend Valuation Model

In the valuation process, the intrinsic value of any investment equals the *present value of its expected cash benefits*. For a share, this amounts to the cash dividends received each year plus the future sale price of the share. One way to view the cash flow benefits from a share is to assume that the dividends will be received over an infinite time horizon—an assumption that is appropriate if the firm is considered a 'going concern'. Seen from this perspective, *the value of a share is equal to the present value of all the future dividends it is expected to provide over an infinite time horizon.*

When a shareholder sells a share, from a strictly theoretical point of view, what is really being sold is the right to all remaining future dividends. Thus, just as the *current* value of a share is a function of future dividends, the *future* price of the share is also a function of future dividends. In this framework, the *future* price of the share will rise or fall as the outlook for dividends (and the required rate of return) changes. This approach, which holds that the value of a share is a function of its future dividends, is known as the **dividend valuation model** (DVM).

dividend valuation model (DVM)
a model that values a share on the basis of the future dividend stream it is expected to produce; its three versions are zero-growth, constant-growth and variable growth.

There are three versions of the dividend valuation model, each based on different assumptions about the future rate of growth in dividends:

1. *The zero-growth model* assumes that dividends will not grow over time.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

2. *The constant-growth model*, which is the basic version of the dividend valuation model, assumes that dividends will grow by a fixed/constant rate over time.
3. *The variable-growth model* assumes that the rate of growth in dividends will vary over time.

In one form or another, the DVM is widely used in practice to value many of the larger, more mature companies.

Zero Growth The simplest way to picture the dividend valuation model is to assume the share has a fixed stream of dividends. In other words, dividends stay the same year in and year out, and they're expected to do so in the future. Under such conditions, the value of a zero-growth share is simply *the capitalised value of its annual dividends*. To find the capitalised value, just divide annual dividends by the required rate of return, which in effect acts as the capitalisation rate. That is,

Equation 8.7

$$\text{Value of a share} = \frac{\text{Annual dividends}}{\text{Required rate of return}}$$

For example, if a share paid a (constant) dividend of $3 and you wanted to earn 10% on your investment, the value of the share would be $30 ($3 ÷ 0.10 = $30).

As you can see, the only cash flow variable that's used in this model is the fixed annual dividend. Given that the annual dividend on this share never changes, does that mean the price of the share never changes? Absolutely not! For as the required rate of return (capitalisation rate) changes, so will the price of the share. Thus, if the required rate of return goes up to, say, 15%, the price of the share will fall to $20 ($3 ÷ 0.15). Although this may be a very simplified view of the valuation model, it's actually not as far-fetched as it may appear, for this is basically the procedure used to price *preference shares* in the marketplace.

Constant Growth The zero-growth model is a good beginning, but it does not take into account a growing stream of dividends. The standard and more widely recognised version of the dividend valuation model assumes that dividends will grow over time at a specified rate. In this version, the value of a share is still considered to be a function of its future dividends, but such dividends are expected to grow forever (to infinity) at a constant rate of growth, *g*. Accordingly, we can find the value of a share as follows:

Equation 8.8

$$\text{Value of a share} = \frac{\text{Next year's dividends}}{\text{Required rate of return} - \text{Constant rate of growth in dividends}}$$

Equation 8.8a

$$V = \frac{D_1}{k - g}$$

where

D_1 = annual dividends expected to be paid *next* year (the first year in the forecast period)

k = the capitalisation rate, or discount rate (which defines the required rate of return on the investment)

g = the annual rate of growth in dividends, which is expected to hold constant to infinity

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

In this version of the DVM, the model assumes that dividends will grow to infinity at a constant rate. (A similar assumption also applies, by the way, to the variable-growth model.) Even so, it is important to understand that just because we assume that dividends will go on forever, *that doesn't mean we assume the investor will hold the share forever*. Indeed, the DVM makes *no assumptions about how long the investor will hold the share*, for the simple reason that the investment horizon has no bearing on the computed value of a share. Thus, with the constant-growth DVM, it is irrelevant whether the investor has a one-year, five-year or 10-year expected holding period. The computed value of the share will be the same under all circumstances. So long as the input assumptions (k, g and D_0) are the same, the value of the share will be the same regardless of the intended holding period.

You'll also note that as simple as this model is, it nonetheless succinctly captures the very essence of share valuation: *increase* the cash flow (through D or g) and/or *decrease* the required rate of return (k), and the value of the share will *increase*. Also note that in the DVM, *k defines the total return* to the shareholder, and *g represents the expected capital gains* on the investments. We know that, in practice, there are potentially two components that make up the total return to a shareholder: dividends and capital gains. As it turns out, the returns from both dividends and capital gains are captured in the DVM. That is, because k represents total returns and g defines the amount of capital gains embedded in k, it follows that if you subtract g from k $(k - g)$, you'll have the expected dividend yield on the share. Thus, the expected total return on a share (k) equals the returns from capital gains (g) plus the returns from dividends ($k - g$).

The constant-growth DVM should not be used with just any share. Rather, *it is best suited to the valuation of mature, dividend-paying companies* that hold established market positions. These are companies with strong track records that have reached the 'mature' stage of growth. They are probably large-cap (or perhaps even some mature mid-cap) companies that have demonstrated an ability to generate steady—although perhaps not spectacular—rates of growth year in and year out. The growth rates *may not be identical* from year to year, but they tend to move within such a small range that they are seldom far off the average rate. These are companies that have established dividend policies and fairly predictable growth rates in earnings and dividends.

In addition to its use in valuing mature, dividend-paying companies, the constant-growth DVM is also widely used to *value the market as a whole*. That is, using something like the S&P ASX 200, analysts will often employ the DVM to determine the expected return on the market for the coming year—in other words, they'll use it to find the R_m in the capital asset pricing model (CAPM).

Applying the Constant-Growth DVM Use of the constant-growth DVM requires some basic information about the share's required rate of return, its *current* level of dividends, and the expected rate of growth in dividends. A fairly simple, albeit naïve, way to find the dividend growth rate, g, is to look at the *historical* behaviour of dividends. If they are growing at a relatively constant rate, you can assume they will continue to grow at (or near) that average rate in the future. You can get historical dividend data in a company's annual report, from the ASX or from various online sources.

With the help of a good hand-held calculator, we can use basic present value arithmetic to find the growth rate embedded in a stream of dividends. Here's how: take the level of dividends, say, 10 years ago and the level that's being paid today. Presumably, dividends today will be (much) higher than they were 10 years ago, so, using your calculator, find the present value discount rate that equates the (higher) dividend today to

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

the level paid 10 years earlier. When you find that, you've found the growth rate; in this case, the *discount rate is the average rate of growth in dividends*. (See Chapter 5 for a detailed discussion of how to use present value to find growth rates.) Finding the appropriate growth rate, g, is a critical element in the DVM. Accordingly, we'll examine this variable in more detail later in this chapter, at which point we will discuss a more analytically sound procedure. For now, we will assume that the naïve approach (above) does an adequate job in defining the growth rate, so let's proceed with our illustration of the DVM.

Once you've determined the dividend growth rate, you can find next year's dividend, D_1, as $D_0 \times (1 + g)$, where D_0 equals the actual (current) level of dividends. Let's say that in the latest year, Sweatmore Industries paid \$2.50 a share in dividends. If you expect those dividends to grow at the rate of 6% a year, you can find next year's dividends as follows: $D_1 = D_0(1 + g) = \$2.50\ (1 + 0.06) = \$2.50(1.06) = \$2.65$. The only other information you need is the required rate of return (capitalisation rate), k. (Note that k must be greater than g for the constant-growth model to be mathematically operative.)

To see this dividend valuation model at work, consider a share that currently pays an annual dividend of \$1.75. Let's say that by using the present-value approach described above, you find that dividends are growing at a rate of 8% a year, and you expect they will continue to do so into the future. In addition, based on the CAPM, you determine that this investment should carry a required rate of return of 12%. Given this information, you can use Equation 8.8 to value the share. That is, given $D_0 = \$1.75$, $g = 0.08$, and $k = 0.12$, it follows that:

$$\text{Value of a share} = \frac{D_0(1 + g)}{k - g} = \frac{\$1.75(1.08)}{0.12 - 0.08} = \frac{\$1.89}{0.04} = \underline{\underline{\$47.25}}$$

Thus, if you want to earn a 12% return on this investment—made up of 8% in capital gains (g), plus 4% in dividend yield (i.e. \$1.89 ÷ \$47.25 = 0.04)—then according to the constant-growth dividend valuation model, you should pay no more than \$47.25 a share.

With this version of the DVM, *the price of the share will increase over time* so long as k and g don't change. In fact, as we noted earlier, the growth rate (g) defines the amount of (expected) capital gains embedded in the future price of the share. So, if $g = 8\%$, then we can expect the future price of the share to go up around 8% per year. This will occur because the cash flow from the investment will increase as dividends grow. To see how this happens, let's carry our example a little further. Recall that $D_0 = \$1.75$, $g = 8\%$ and $k = 12\%$. On the basis of this information, we found the current value of the share to be \$47.25. Now look what happens to the price of this share if k and g don't change:

Year	Dividend	Share Price*
(Current year) 0	\$1.75	\$47.25
1	1.89	51.00
2	2.04	55.00
3	2.20	59.50
4	2.38	64.25
5	2.57	69.50

*As determined by the dividend valuation model, given $g = 0.08$, $k = 0.12$ and D_1 = next year's dividend level.

As the table shows, the price of the share should rise from \$47.25 today to around \$69.50 in five years—as expected, that works out to an 8% growth rate.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Just as we can use this version of the DVM to value a share today, so too can we find the expected price of the share *in the future* by using the same valuation model. To do this, we simply redefine the appropriate level of dividends. For example, to find the price of the share in year 3, we use the expected dividend in the third year, \$2.20, and increase it by the factor $(1 + g)$. Thus, the share price in year $3 = D_3 \times (1 + g)/(k - g) = \$2.20 \times (1 + 0.08) \div (0.12 - 0.08) = \$2.38 \div 0.04 = \$59.50$. Of course, if future expectations about k or g do change, the *future price* of the share will change accordingly. Should that occur, you could use the new information to decide whether to continue to hold the share.

Variable Growth Although the constant-growth dividend valuation model is an improvement over the zero-growth model, it still has some shortcomings. The most obvious is the fact that it does not allow for changes in expected growth rates. To overcome this problem, we can use a form of the DVM that allows for *variable rates of growth* over time. Essentially, the *variable-growth dividend valuation model* derives, in two stages, a value based on future dividends and the future price of the share (which price is a function of all future dividends). The variable-growth version of the model finds the value of a share as follows:

Equation 8.9

$$\text{Value of a share} = \begin{array}{c}\text{Present value of future dividends during the initial variable-growth period}\end{array} + \begin{array}{c}\text{Present value of the price of the share at the end of the variable-growth period}\end{array}$$

Equation 8.9a

$$V = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \ldots \frac{D_v}{(1+k)^v} + \frac{\dfrac{D_v(1+g)}{(k-g)}}{(1+k)^v}$$

where

D_1, D_2, etc. = future annual dividends
v = number of years in the initial variable-growth period

Note that the last element in this equation is the standard constant-growth dividend valuation model, which is used to find the price of the share at the end of the initial variable-growth period.

This form of the DVM is appropriate for companies that are expected to experience rapid or variable rates of growth for a period of time—perhaps for the first three to five years—and then settle down to a constant (average) growth rate thereafter. This, in fact, is the growth pattern of many companies, so the model has considerable application in practice. (It also overcomes one of the operational shortcomings of the constant-growth DVM in that k does not always have to be greater than g. That is, *during the variable-growth period*, the rate of growth, g, can be greater than the required rate of return, k, and the model will still be fully operational.)

Finding the value of a share using Equation 8.9 is actually a lot easier than it looks. To do so, follow these steps:

1. Estimate annual dividends during the initial variable-growth period and then specify the constant rate, g, at which dividends will grow after the initial period.
2. Find the present value of the dividends expected during the initial variable-growth period.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

3. Using the constant-growth DVM, find the price of the share at the end of the initial growth period.
4. Find the present value of the price of the share (as determined in step 3). Note that the price of the share is discounted for the same length of time as the last dividend payment in the initial growth period, because the share is being priced (per step 3) at the end of this initial period.
5. Add the two present-value components (from steps 2 and 4) to find the value of a share.

Applying the Variable-Growth DVM To see how this works, let's apply the variable-growth model to Sweatmore Industries (see page 263). Let's assume that dividends will grow at a variable rate for the first three years (2010, 2011 and 2012). After that, the annual rate of growth in dividends is expected to settle down to 8% and stay there for the foreseeable future. Starting with the latest (2009) annual dividend of $2.21 a share, we estimate that Sweatmore's dividends should grow by 20% next year (in 2010), by 16% in 2011 and then by 13% in 2012, before dropping to an 8% rate.

Using these (initial) growth rates, we project that dividends in 2010 will amount to $2.65 a share ($2.21 × 1.20), and will rise to $3.08 ($2.65 × 1.16) in 2011 and to $3.48 ($3.08 × 1.13) in 2012. In addition, using CAPM, we feel that Sweatmore's shares should produce a minimum (required) rate of return (k) of at least 14%. We now have all the input we need and are ready to put a value on Sweatmore Industries. Table 8.4 shows the variable-growth DVM in action. The value of Sweatmore shares,

TABLE 8.4 Using the Variable-Growth DVM to Value Sweatmore Shares

EXCEL With Spreadsheets

Step

1. Projected annual dividends:

2010	$2.65
2011	3.08
2012	3.48

Estimated annual rate of growth in dividends, g, for 2013 and beyond: 8%

2. Present value of dividends, using a required rate of return, k, of 14%, during the initial variable-growth period:

Year	Dividends	Present Value
2010	$2.65	$2.32
2011	3.08	2.37
2012	3.48	2.35
	Total	$7.04 (to step 5)

3. Price of the share at the end of the initial growth period:

$$P_{2012} = \frac{D_{2013}}{k - g} = \frac{D_{2012} \times (1 + g)}{k - g} = \frac{\$3.48 \times (1.08)}{0.14 - 0.08} = \frac{\$3.76}{0.06} = \$62.67$$

4. Discount the price of the share (as computed above) back to its present value, at k, of 14%:

$$\$62.67 \div (1.14)^3 = \$42.30 \text{ (to step 5)}$$

5. Add the share value of the initial dividend stream (step 2) to the present value of the price of the share at the end of the initial growth period (step 4):

Value of Sweatmore shares $7.04 + $42.30 = $49.34

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

according to the variable-growth DVM, is just under $49.34 a share. In essence, that's the maximum price you should be willing to pay for the share if you want to earn a 14% rate of return.

Defining the Expected Growth Rate Mechanically, application of the DVM is really quite simple. It relies on just three key pieces of information: future dividends, future growth in dividends and a required rate of return. But this model is not without its difficulties: one of the most difficult (and most important) aspects of the DVM is *specifying the appropriate growth rate*, g, *over an extended period of time*. Whether you are using the constant-growth or the variable-growth version of the dividend valuation model, the growth rate, *g*, has an enormous impact on the value derived from the model. Indeed, the DVM is *very sensitive* to the growth rate being used, because that rate affects both the model's numerator and its denominator. As a result, in practice analysts spend a good deal of time trying to come up with a growth rate, *g*, for a given company and its shares.

As we saw earlier in this chapter, we can define the growth rate from a strictly historical perspective (by using present value to find the past rate of growth) and then use it (or something close) in the DVM. While that approach might work in some cases, it does have some serious shortcomings. What's needed is a procedure that looks at the key forces that actually drive the growth rate. Fortunately, we have such an approach, and one that's widely used in practice; it defines the growth rate, *g*, as follows:

Equation 8.10

$$g = \text{ROE} \times \text{Company's retention rate, } rr$$

where

Equation 8.10a

$$rr = 1 - \text{Dividend payout ratio}$$

Both variables in Equation 8.10 (ROE and *rr*) are *directly related to the company's rate of growth*, and both play key roles in defining a company's future growth. The *retention rate* represents the percentage of its profits that the company ploughs back into the business. Thus, if the company pays out 35% of its earnings in dividends (i.e. it has a dividend payout ratio of 35%), then it has a retention rate of 65%: $rr = 1 - 0.35 = 0.65$. The retention rate, in effect, indicates the amount of capital that is flowing back into the company to finance growth. Other things being equal, the more money being retained in the company, the higher the rate of growth.

The other component of Equation 8.10 is the familiar return on equity (ROE). Clearly, the more the company can earn on its retained capital, the higher the growth rate. Remember that ROE is made up of the net profit margin, total asset turnover and equity multiplier (see Equation 7.13, page 230), so if you want to get a handle on how ROE is impacting on the company's growth rate, look to those three components.

To see how this works, consider a situation where a company retains, on average, about 80% of its earnings and generates an ROE of around 18%. (Driving the firm's ROE is a net profit margin of 7.5%, a total asset turnover of 1.20 and an equity multiplier of 2.0.) Under these circumstances, we would expect the firm to have a growth rate of around 14.5%:

$$g = \text{ROE} \times rr = 0.18 \times 0.80 = \underline{\underline{14.4\%}}$$

INVESTOR FACTS

WHO NEEDS BUY OR SELL RECOMMENDATIONS?— Securities analysts are always giving out buy, sell or hold ratings on the shares they cover. Can investors really beat the market by following these ratings? A recent study found that the best thing to do is just ignore those things. Instead, pay very close attention to rating *upgrades* and *downgrades*. The study found that upgrades (e.g. from hold to buy) or downgrades (e.g. from buy to hold) had far more impact on investor returns than the buy or sell ratings themselves. The message is simple: buy on the upgrades, sell on the downgrades.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Actually, the growth rate will probably be a bit more than 14.5%, because Equation 8.10 ignores financial leverage, which in itself will magnify growth. But at least the equation gives you a good idea of what to expect. Similarly, Equation 8.10 can serve as a starting point in assessing past and future growth. You can use it to compute expected growth and then assess the two key components of the formula (ROE and *rr*) to see whether they're likely to undergo major changes in the future. If so, then what impact is the change in ROE and/or *rr* likely to have on the growth rate, *g*? The idea is to take the time to study the forces (ROE and *rr*) that drive the growth rate, because the DVM itself is so sensitive to the rate of growth being used. Employ a growth rate that's too high and you'll end up with an intrinsic value that's way too high also. The downside, of course, is that you may end up buying a share that you really shouldn't.

Other Approaches to Share Valuations

In addition to the DVM, the market has also developed other ways of valuing shares. Some are simply variations of the DVM; others are alternatives to it. The motivation for using these approaches is to find techniques that are compatible to given investment horizons and/or that can be used with non-dividend-paying shares. In addition, for a variety of reasons, some investors prefer to use procedures that don't rely on corporate earnings as the basis of valuation. For these investors, it's not earnings that matter, but instead things like cash flow, sales or book value.

One valuation procedure that is popular with many investors is the so-called *dividends-and-earnings approach*, which directly utilises future dividends and the future selling price of the share as the relevant cash flows. Another is the *P/E approach*, which builds the share valuation process around the share's price/earnings ratio. One of the major advantages of these procedures is that *they don't rely on dividends as the only input*. Accordingly, they can be used with shares that are more growth-oriented and that pay little or nothing in dividends. Let's take a closer look at both of these approaches, as well as a technique that arrives at the expected return on the share (in percentage terms) rather than a (dollar-based) 'justified price'.

dividend-and-earnings approach
share valuation approach that uses projected dividends, EPS and P/E multiples to value a share.

A Dividends-and-Earnings Approach As we saw earlier, the value of a share is a function of the amount and timing of future cash flows and the level of risk that must be taken on to generate that return. The **dividends-and-earnings (D&E) approach** (also known as the *DCF approach*) conveniently captures the essential elements of expected risk and return and does so in a present-value context. The model is as follows:

Equation 8.11

$$\text{Value of a share} = \text{Present value of future dividends} + \text{Present value of the price of the share at the date of sale}$$

Equation 8.11a

$$V = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_N}{(1+k)^N} + \frac{SP_N}{(1+k)^N}$$

where

D_t = future annual dividend in year t
SP_N = estimated share price at date of sale, year N
N = number of years in the investment horizon

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Note its similarities to the variable-growth DVM: it is present-value–based, and its value is derived from future dividends and the expected future price of the share. The big difference between the two procedures revolves around the role that dividends play in determining the future price of the share. That is, the D&E approach doesn't rely on dividends as the principal player in the valuation process. Therefore, it works just as well with companies that pay little or nothing in dividends as it does with shares that pay out a lot in dividends. Along that same line, whereas the variable-growth DVM relies on future dividends to price the share, the D&E approach employs projected earnings per share and estimated P/E multiples. These are the same two variables that drive the price of the share in the market. Thus, the D&E approach is far more flexible than the DVM and is easier to understand and apply. Using the D&E valuation approach, we focus on projecting future dividends and share price behaviour over a defined, finite investment horizon, much as we did for Universal Office Furnishings in Table 8.3 (on page 256).

Especially important in the D&E approach is finding a viable P/E multiple that you can use to project the future price of the share. This is a critical part of this valuation process, because of the major role that capital gains (and therefore the estimated price of the share at its date of sale) play in defining the level of security returns. Using market or industry P/E ratios as benchmarks, you should establish a multiple that you feel the share will trade at in the future. Like the growth rate, g, in the DVM, the P/E multiple is the single most important (and most difficult) variable to project in the D&E approach.

Using this input, along with estimated future dividends and earnings per share, this present-value–based model generates a *justified price* based on estimated returns. This intrinsic value represents the price you should be willing to pay for the share, given its expected dividend and price behaviour and assuming you want to generate a return that is equal to or greater than your required rate of return.

To see how this procedure works, consider once again the case of Universal Office Furnishings. Let's return to our original three-year investment horizon. Given the forecasted annual dividends and share price from Table 8.3, along with a required rate of return of 18% (as computed earlier using Equation 8.6, on page 258), we can see that the value of Universal's share is:

$$V = \frac{\$0.18}{1.18} + \frac{\$0.24}{1.18^2} + \frac{\$0.28}{1.18^3} + \frac{\$93.20}{1.18^3} = \$0.15 + \$0.17 + \$0.17 + \$56.76 = \underline{\underline{\$57.25}}$$

According to the D&E approach, Universal's share should be valued at about $57. That assumes, of course, that our projections hold up—particularly with regard to our forecasted EPS and P/E multiple in 2013. For example, if the P/E ratio drops from 20 to 17 times earnings, then the value of a share will drop to less than $50 (to around $48.75/share). Given that we have confidence in our projections, the present-value figure computed here means that we would realise our (18%) desired rate of return so long as we can buy the share at no more than $57. Because UVRS is currently trading at (around) $41.50, we can conclude that the share at present is an *attractive investment vehicle*. That is, because we can buy the share at *less* than its computed intrinsic value, we'll be able to earn our required rate of return, *and then some*.

Note that by most standards, Universal would be considered a highly risky investment, if for no other reason than the fact that *nearly all the return is derived from capital gains*. Indeed, dividends alone account for less than 1% of the value of the share. That is, only 49 cents of the $57.25 comes from dividends. Clearly, if we're wrong about the EPS or the P/E multiple, the future price of the share (in 2013) could be way off the mark, and so, too, would our projected return.

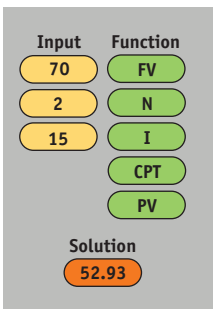
Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Actually, the D&E approach to share valuation is not an alternative to the DVM, but rather, is simply a *variation* of that model. That is, regardless of what holding period is used in the D&E approach (be it one year, three years, 10 years or whatever), the computed value will be the same as that obtained with the constant-growth (or even variable-growth) DVM, *so long as the input assumptions regarding k, g and D_0 are the same*. Need proof? Consider the constant-growth DVM example we used earlier. Recall that we used a share that had a current annual dividend (D_0) of \$1.75, a growth rate (g) of 8%, and a required return (k) of 12%. Let's use this same share, *with these same assumptions*, but this time we'll use the D&E approach to value the share, assuming a three-year investment horizon. Under these conditions, with an 8% growth rate, dividends would grow to \$1.89 next year (\$1.75 × 1.08), \$2.04 in the second year and \$2.20 a share in year 3. Also, at an 8% appreciation rate, the price of the share would go up to \$59.50 by the end of year 3. Using this information in the D&E model, the value of the share would be:

$$\text{Value} = \frac{\$1.89}{1.12^1} + \frac{\$2.04}{1.12^2} + \frac{\$2.20}{1.12^3} + \frac{\$59.50}{1.12^3} = \$1.69 + \$1.63 + \$1.57 + \$42.36 = \underline{\underline{\$47.25}}$$

Note that we end up with the same value here as we did using the DVM (see page 263). So no matter what holding period or which procedure we use, D&E or DVM, so long as the input assumptions are the same, the computed share values will be the same.

Finding the Value of Non–Dividend-Paying Shares What about *the value of a share that does not pay dividends*—and is not expected to do so for the foreseeable future? That's not a problem with the D&E approach. Using Equation 8.11, simply set all dividends to zero, so the computed value of the share would come solely from its projected future price. In other words, the value of the share will equal the present value of its price at the end of the holding period.



Consider, for example, an investor who's looking at a share that pays no dividends; she estimates that at the end of a two-year holding period, this share should be trading at around \$70. Using a 15% required rate of return, this share would have a present value of \$70 ÷ 1.15^2 = \$52.93. This value is, of course, the intrinsic value, or justified price of the share. So long as it's trading for around \$53 or less, it would be a worthwhile investment candidate. (*Note:* As shown at the left, you can just as easily *use a hand-held calculator to find the value of this share*.)

Determining Expected Return Sometimes investors find it more convenient to deal in terms of expected return than a dollar-based justified price. This is no problem, nor is it necessary to sacrifice the present-value dimension of the share valuation model to achieve such an end. We can find expected return by using the (present-value–based) *internal rate of return (IRR)* procedure first introduced in Chapter 5. This approach to share valuation uses forecasted dividend and price behaviour, along with the *current market price*, to arrive at the fully compounded rate of return you can expect to earn from a given investment.

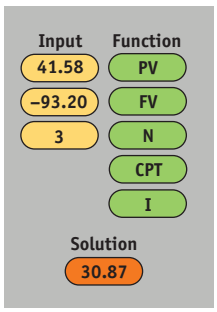
To see how a share's expected return is computed, let's look once again at Universal Office Furnishings. Using 2011–2013 data from Table 8.3 (on page 256), along with the share's current price of \$41.58, we can determine Universal's expected return. To do so, we find the discount rate that equates the future stream of benefits (i.e. the future annual dividends and future price of the share) to the share's current market price. In other words, find the discount rate that produces a present value of future benefits equal to the price of the share, and you have the IRR, or expected return on that share.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Here's how it works. Using the Universal example, we know that the share is expected to pay dividends of $0.18, $0.24 and $0.28 over the next three years. At the end of that time, we hope to sell the share for $93.20. Given that the share is currently trading at $41.58, we're looking for the discount rate, *r*, that will produce a present value (of the future annual dividends and share price) equal to $41.58. That is,

$$\frac{\$0.18}{(1+r)^1} + \frac{\$0.24}{(1+r)^2} + \frac{\$0.28}{(1+r)^3} + \frac{\$93.20}{(1+r)^3} = \underline{\underline{\$41.58}}$$

We need to solve for the discount rate (the present-value interest factors) in this equation. Through a process of 'hit and miss' (or with the help of a personal computer or hand-held calculator), you'll find that with an interest factor of 31.3%, the present value of the future cash benefits from this investment will equal exactly $41.58. That, of course, is our expected return. Thus, Universal can be expected to earn a fully compounded annual return of about 31%, assuming that the share can be bought at $41.58, is held for three years (during which time investors receive indicated annual dividends), and then is sold for $93.20 at the end of the three-year period. When compared to its 18% *required rate of return*, the 31.3% *expected return* makes Universal look like a very attractive investment candidate.



It's even easier to determine the return on shares that don't pay dividends. Just *find the discount rate that equates the projected future price of the share to its current share price*. For example, if Universal didn't pay dividends, then all we'd have to do is find the discount rate that equates the projected share price of $93.20 (three years from now) to the share's current price of $41.58. Using a hand-held calculator as shown at the left, we arrive at an expected rate of return of about 30.9%. Given the return of 31.3% with dividends versus 30.9% without, the cash flow from dividends clearly doesn't play much of a role in defining the potential return on this share.

The Price/Earnings (P/E) Approach

One of the problems with the share valuation procedures we've looked at so far is that they are fairly mechanical. They involve a good deal of 'number crunching.' Although such approaches are fine with some shares, they do not work well with others. Fortunately, there is a more intuitive approach. That alternative is the **price/earnings** (or **P/E**) **approach** to share valuation.

price/earnings (P/E) approach
share valuation approach that tries to find the P/E ratio that is most appropriate for the share; this ratio, along with the estimated EPS, is used to determine a reasonable share price.

The P/E approach is a favourite of professional security analysts and is widely used in practice. It's relatively simple to use; it's based on the standard P/E formula first introduced in Chapter 7 (Equation 7.14, on page 231). There we showed that a share's P/E ratio is equal to its market price divided by the share's EPS. Using this equation and solving for the market price of the share, we have:

Equation 8.12

$$\text{Share price} = \text{EPS} \times \text{P/E ratio}$$

Equation 8.12 basically captures the P/E approach to share valuation. That is, given an *estimated EPS* figure, *you decide on a P/E ratio that you feel is appropriate for the share. Then you use it in Equation 8.12 to see what kind of price you come up with and how that compares to the share's current price.*

Actually, this approach is no different from what's used in the market every day. Look at the share quotes in the *Australian Financial Review*. They include the share's P/E ratio and show what investors are willing to pay for one dollar of earnings. Essentially, the *AFR* relates the company's earnings per share for the *last* 12 months

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

(known as *trailing earnings*) to the latest price of the share. In practice, however, investors buy shares not for their past earnings but for their *expected future earnings*. Thus, in Equation 8.12, it's customary to use the *forecasted EPS for next year*—that is, to use projected earnings one year out.

The first thing you have to do to implement the P/E approach is to come up with an expected EPS figure for next year. In the early part of this chapter, we saw how this might be done (see, for instance, Equations 8.2 and 8.3 on page 253). Given the forecasted EPS, the next step is to evaluate the variables that drive the P/E ratio. Most of that assessment is intuitive. For example, you might look at the share's expected rate of growth in earnings, any potential major changes in the firm's capital structure or dividends, and any other factors, such as relative market or industry P/E multiples, that might affect the share's multiple. You could use such inputs to come up with a base P/E ratio. Then adjust that base, as necessary, to account for the perceived state of the market and/or anticipated changes in the rate of inflation.

Along with estimated EPS, we now have the P/E ratio we need to compute (via Equation 8.12) the price at which the share should be trading. Take, for example, a share that's currently trading at $37.80. One year from now, it's estimated that this share should have an EPS of $2.25. If you feel that the share should be trading at a P/E ratio of 20 times projected earnings, then it should be valued at $45 a share (i.e. $2.25 $\times$ 20). By comparing this targeted price to the current market price of the share, you can decide whether the share is a good buy. In this case, you would consider the share undervalued and therefore a good buy, since the computed price of the share ($45) is more than its market price (of $37.80).

While this is the principal application of the P/E approach, you'll find that a *variation of this procedure* is also used with the D&E and IRR approaches. That is, by using estimated figures for *both* EPS and the P/E multiple, you can come up with *the share price that's expected to prevail at the end of a given investment horizon*. Throw in any dividends that may be received, discount that cash flow (of dividends and future share price) back to the present, and you have either the *justified price*, as in the D&E approach, or the *expected rate of return*, as in the IRR approach.

Other Price-Relative Procedures

As we saw with the P/E approach, price-relative procedures base their valuations on the assumptions that *the value of a share should be directly linked to a given performance characteristic of the company*, such as earnings per share. These procedures involve a good deal of judgment and intuition, and they rely heavily on the market expertise of the analysts. Besides the P/E approach, there are several other price-relative procedures that are used by investors who, for one reason or another, want to use some measure other than earnings to value shares. They include:

- The price-to-cash-flow (P/CF) ratio
- The price-to-sales (P/S) ratio
- The price-to-book-value (P/BV) ratio

Like the P/E multiple, these procedures determine the value of a share by relating share price to cash flow, sales or book value. Let's look at each of these in turn to see how they're used in share valuation.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

FREE CASH FLOW—Cash flow indicates the ability of the firm not only to cover the costs of producing goods and services, but also to generate excess cash for its shareholders. One way to find out how the firm is doing is to determine its 'free cash flow': subtract the firm's capital expenditures and dividend payments from its cash flow from operations (as obtained from the statement of cash flows). Free cash flow is considered to be 'excess' cash flow that the company can use as it deems most beneficial. With strong free cash flow, the company can retire debt, develop new products and increase dividend payments. Obviously, the stronger the company's free cash flow, the better it is for the shareholders.

A Price-to-Cash-Flow (P/CF) Procedure This measure has long been popular with investors, because cash flow is felt to provide a more accurate picture of a company's earning power than net earnings. When used in share valuation, the procedure is almost identical to the P/E approach. That is, a P/CF ratio is combined with a *projected* cash flow per share to arrive at what the share should be trading for.

Although it is quite straightforward, this procedure nonetheless has one problem—defining the appropriate cash flow measure. While some investors use *cash flow from operations*, as obtained from the statement of cash flows, others use *free cash flow*. One measure of free cash flow can be found by subtracting *cash flow from investing* from *cash flow from operations*. A measure that seems to be the most popular with professional analysts is EBITDA (earnings before interest, taxes, depreciation and amortisation), which we'll use here. EBITDA represents 'cash earning' to the extent that the major non-cash expenditures (depreciation and amortisation) are added back to operating earnings (EBIT).

The price-to-cash-flow (P/CF) ratio is computed as follows:

Equation 8.13

$$\text{P/CF ratio} = \frac{\text{Market price per share}}{\text{Cash flow per share}}$$

where cash flow per share = EBITDA ÷ number of shares outstanding.

Before you can use the P/CF procedure *to assess the current market price of a share*, you first have to come up with a forecasted cash flow per share one year out, and then define an appropriate P/CF multiple to use. For most firms, it is very likely that the cash flow (EBITDA) figure will be larger than net earnings available to shareholders. As a result, *the cash flow multiple will probably be lower than the P/E multiple*. In any event, once an appropriate P/CF multiple is determined (subjectively and with the help of any historical market information), simply multiply it by the expected cash flow per share one year from now to find the price at which the share should be trading. That is, the computed price of a share = cash flow per share × P/CF ratio.

To illustrate, assume a company currently is generating an EBITDA of $325 million, which is expected to increase by some 12.5% to around $365 million ($325 million × 1.125) over the course of the next 12 months. On a per-share basis, let's say that translates into a *projected* cash flow per share of nearly $6.50. If we feel this share should be trading at about eight times its projected cash flow per share, then it should be valued at around $52 a share. Thus, if it is currently trading in the market at $45.50 (or at seven times its projected cash flow per share), we can conclude, once again, that the share is undervalued and, therefore, should be considered a viable investment candidate.

Price-to-Sales (P/S) and Price-to-Book-Value (P/BV) Ratios Some companies, like high-tech start-ups or exploration companies, have little, if any, earnings. Or if they do have earnings, they're either unreliable or very erratic and therefore highly unpredictable. In these cases, valuation procedures based on earnings (and even cash flows) aren't much help. So investors turn to other procedures—those based on sales or book value, for example. While companies may not have much in the way of profits, they certainly have sales and, ideally, some book value. (As noted in Chapter 7, *book value* is simply another term for equity, or net worth.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Both the price-to-sales (P/S) and price-to-book-value (P/BV) ratios are used exactly like the P/E and P/CF procedures. Recall that we defined the P/BV ratio in Equation 7.19 (on page 233) as follows:

$$\text{P/BV ratio} = \frac{\text{Market price per share}}{\text{Book value per share}}$$

We can define the P/S ratio in a similar fashion:

Equation 8.14

$$\text{P/S ratio} = \frac{\text{Market price per share}}{\text{Sales per share}}$$

where sales per share equals net annual sales (or revenues) divided by the number of shares outstanding.

Many bargain-hunting investors look for shares with P/S ratios of 2.0 or less. These securities are felt to offer the most potential for future price appreciation. Especially attractive to these investors are very low P/S multiples of 1.0 or less. Think about it: with a P/S ratio of, say, 0.9, you can buy $1 in sales for only 90 cents! So long as the company isn't a basket case, such low P/S multiples may well be worth pursuing.

Keep in mind that while the emphasis may be on low multiples, *high P/S ratios aren't necessarily bad*. To determine if a high multiple—more than 3.0 or 4.0, for example—is justified, look at the company's net profit margin. Companies that can consistently generate high net profit margins often have high P/S ratios. Here's a valuation rule to remember: *high profit margins should go hand-in-hand with high P/S multiples*. That makes sense, too, because a company with a high profit margin brings more of its sales down to the bottom line in the form of profits.

You would also expect the price-to-book-value measure to be low, but probably not as low as the P/S ratio. Indeed, unless the market becomes grossly overvalued (think about what happened in 1999 and 2000), most shares are likely to trade at multiples of less than three to five times their book values. And in this case, unlike with the P/S multiple, there's usually little justification for abnormally high price-to-book-value ratios—except perhaps for firms that have abnormally *low* levels of equity in their capital structures. Other than that, high P/BV multiples are almost always caused by 'excess exuberance'. As a rule, when shares start trading at seven or eight times their book values, or more, they are becoming overvalued.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

8.6 Briefly describe the *dividend valuation model* and the three versions of this model. Explain how CAPM fits into the *DVM*.

8.7 What is the difference between the variable-growth dividend valuation model and the *dividends-and-earnings approach* to share valuation? Which procedure would work better if you were trying to value a growth share that pays little or no dividends? Explain.

8.8 How would you go about finding the *expected return* on a share? Note how such information would be used in the share selection process.

8.9 Briefly describe the *P/E approach* to share valuation and note how this approach differs from the variable-growth DVM. Describe the *P/CF approach* and note how it is used in the share valuation process. Compare the P/CF approach to the P/E approach, noting the relative strengths and weaknesses of each.

8.10 Briefly describe the *price/sales* ratio and explain how it is used to value shares. Why not just use the P/E multiple? How does the P/S ratio differ from the *P/BV measure*?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to develop your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Explain the role that a company's future plays in the share valuation process. The final phase of security analysis involves an assessment of the investment merits of a specific company and its share. The focus here is on formulating expectations about the company's prospects and the risk and return behaviour of the share. In particular, we would want some idea of the share's future earnings, dividends and share prices, which are ultimately the basis of return.

LG 2 Develop a forecast of a share's expected cash flow, starting with corporate sales and earnings, and then moving to expected dividends and share price. Because the value of a share is a function of its future returns, investors must try to formulate expectations about what the future holds for the company. Look first at the company's projected sales and earnings, and then translate those data into forecasted dividends and share prices. These variables define an investment's future cash flow and, therefore, investor returns.

LG 3 Discuss the concepts of intrinsic value and required rates of return, and note how they are used. Information such as projected sales, forecasted earnings and estimated dividends are important in establishing intrinsic value. This is a measure, based on expected return and risk exposure, of what the share ought to be worth. A key element is the investor's required rate of return, which is used to define the amount of return that should be earned given the share's perceived exposure to risk.

LG 4 Determine the underlying value of a share using the zero-growth, constant-growth and variable-growth dividend valuation models. The dividend valuation model (DVM) derives the value of a share from the share's future growth in dividends. There are three versions of the DVM. Zero-growth assumes that dividends are fixed and won't change in the future. Constant-growth assumes that dividends will grow at a constant rate into the future. Variable-growth assumes that dividends will initially grow at varying (or abnormally high) rates, before eventually settling down to a constant rate of growth.

LG 5 Use other types of present-value–based models to derive the value of a share, as well as alternative price-relative procedures. The DVM works well with some types of shares, but not so well with others. Investors may turn to other types of share-valuation approaches, including the D&E and IRR approaches, as well as certain price-relative procedures, like the P/E, P/CF, P/S and P/BV methods. The dividends-and-earnings approach uses a finite investment horizon to derive a present-value–based 'justified price'. Alternatively, investors can determine the expected return on a share (via IRR) by finding the discount rate that equates the share's future cash flows to its current market price. Several price-relative procedures exist as well, such as the price/earnings approach, which uses a projected EPS and the share's P/E ratio to determine whether a share is fairly valued.

Key Terms

common-size income statement, *p. 249*
relative P/E multiple, *p. 252*
required rate of return, *p. 257*
share valuation, *p. 249*
target price, *p. 254*
valuation, *p. 257*

dividend valuation model (DVM), *p. 260*

dividends-and-earnings (D&E) approach, *p. 267*
price/earnings (P/E) approach, *p. 270*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG6 Gain a basic appreciation of the procedures used to value different types of shares, from traditional dividend-paying shares to more growth-oriented shares. All sorts of share valuation models are used in the market; this chapter examined nine more widely used procedures. One thing that becomes apparent in share evaluation is that one approach definitely does not fit all situations. Some approaches (like the DVM) work well with mature, dividend-paying companies. Others (like the D&E, IRR, P/E and P/CF approaches) are more suited to growth-oriented firms, which may not pay dividends. Other price-relative procedures (like P/S and P/BV) are often used to value companies that have little or nothing in earnings, or whose earnings records are sporadic.	

Discussion Questions

LG1 LG2

Q8.1 Using the resources available at your campus or public library, select a company from the ASX that would be of interest to you. (*Hint*: Pick a company that's been publicly traded for at least 10 to 15 years.) Obtain a copy of the latest ASX report on your chosen company. Using the historical and forecasted data, along with one of the valuation techniques described in this chapter, calculate the maximum (i.e. justified) price you'd be willing to pay for this share. Use the CAPM to find the required rate of return on your share. (For this problem, use a market rate of return of 12%, and for the risk-free rate, use the latest government bond rate.)

a. How does the justified price you computed compare to the latest market price of the share?

b. Would you consider this share to be a worthwhile investment candidate? Explain.

LG5 LG6

Q8.2 In this chapter, we examined nine different share valuation procedures:

- Zero-growth DVM
- Constant-growth DVM
- Variable-growth DVM
- Dividends-and-earnings (D&E) approach
- Expected return (IRR) approach
- P/E approach
- Price-to-cash-flow ratio
- Price-to-sales ratio
- Price-to-book-value ratio

a. Which one (or more) of these procedures would be most appropriate when trying to put a value on:

i. A growth share that pays little or nothing in dividends?

ii. The ASX top 100?

iii. A relatively new company that has only a brief history of earnings?

iv. A large, mature, dividend-paying company?

v. A preference share that pays a fixed dividend?

vi. A company that has a large amount of depreciation and amortisation?

b. Of the nine procedures listed above, which *three* do you think are the best? Explain.

c. If you had to choose just *one* procedure to use in practice, which would it be? Explain. (*Note:* Confine your selection to the list above.)

LG1 LG3

Q8.3 Explain the role that the future plays in the share valuation process. Why not just base the valuation on historical information? Explain how the intrinsic value of a share is related to its required rate of return. Illustrate what happens to the value of a share when the required rate of return increases.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG3 LG4 **Q8.4** Assume an investor uses the constant-growth DVM to value a share. Listed below are various situations that could affect the computed value of a share. Look at each one of these individually and indicate whether it would cause the computed value of a share to go up, down or stay the same. Briefly explain your answers.

- **a.** Dividend payout ratio goes up
- **b.** Share's beta rises
- **c.** Equity multiplier goes down
- **d.** Government bond rates fall
- **e.** Net profit margin goes up
- **f.** Total asset turnover falls
- **g.** Market return increases

Assume throughout that the current dividend (D_0) remains the same and that all other variables in the model are unchanged.

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG2 **P8.1** An investor estimates that next year's sales for New World Products should amount to about $75 million. The company has 2.5 million shares outstanding, generates a net profit margin of about 5%, and has a payout ratio of 50%. All figures are expected to hold for next year. Given this information, compute the following.

- **a.** Estimated net earnings for next year
- **b.** Next year's dividends per share
- **c.** The expected price of the share (assuming the P/E ratio is 24.5 times earnings)
- **d.** The expected holding period return (latest share price: $25)

LG2 **P8.2** GrowthCo had sales of $55 million in 2008, and is expected to have sales of $83 650 000 for 2011. The company's net profit margin was 5% in 2008, and is expected to increase to 8% by 2011. Estimate the company's net profit for 2011.

LG2 **P8.3** Goodstuff Corporation has total equity of $500 million and 100 million shares outstanding. Its ROE is 15%. Calculate the company's EPS.

LG2 **P8.4** Goodstuff Corporation has total equity of $500 million and 100 million shares outstanding. Its ROE is 15%. The dividend payout ratio is 33.3%. Calculate the company's dividends per share (round to the nearest cent).

LG2 **P8.5** HighTeck has an ROE of 15%. Its earnings per share are $2.00, and its dividends per share are $0.20. Estimate HighTeck's growth rate.

LG2 **P8.6** Last year, InDebt Company paid $75 million of interest expense, and its average rate of interest for the year was 10%. The company's ROE is 15%, and it pays no dividends. Estimate next year's interest expense assuming that interest rates will fall by 25% and the company keeps a constant equity multiplier of 20%.

LG2 **P8.7** Melissa Popp is thinking about buying some shares of Education Pty Ltd at $50 per share. She expects the price of the shares to rise to $75 over the next three years. During that time she also expects to receive annual dividends of $5 per share.

- **a.** What is the intrinsic worth of this share, given a 10% required rate of return?
- **b.** What is its expected return?

LG4 **P8.8** Amalgamated Aircraft Parts is expected to pay a dividend of $1.50 in the coming year. The required rate of return is 16%, and dividends are expected to grow at 7% per year. Using the dividend valuation model, find the intrinsic value of the company's shares.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG4 **P8.9** Danny is considering a share purchase. The share pays a constant annual dividend of $2.00 per share, and is currently trading at $20. Danny's required rate of return for this share is 12%. Should he buy this share?

LG4 LG5 **P8.10** Larry, Moe and Curley are brothers. They're all serious investors, but each has a different approach to valuing shares. Larry, the oldest, likes to use a one-year holding period to value shares. Moe, the middle brother, likes to use multi-year holding periods. Curley, the youngest of the three, prefers the dividend valuation model.

As it turns out, right now, all three of them are looking at the same share—Australian Home Care Products (AHCP). The company has been listed on the ASX for over 20 years and is widely regarded as a mature, rock-solid, dividend-paying share. The brothers have gathered the following information about AHCP's shares:

Current dividend (D_0) = $2.50/share
Expected growth rate (g) = 9.0%
Required rate of return (k) = 12.0%

All three of them agree that these variables are appropriate, and they will use them in valuing the share. Larry and Moe intend to use the D&E approach; Curley is going to use the constant-growth DVM. Larry will use a one-year holding period; he estimates that with a 9% growth rate, the price of the share will increase to $98.80 by the end of the year. Moe will use a three-year holding period; with the same 9% growth rate, he projects the future price of the share will be $117.40 by the end of his investment horizon. Curley will use the constant-growth DVM, so his holding period isn't needed.

a. Use the information provided above to value the shares first for Larry, then for Moe, then for Curley.
b. Comment on your findings. Which approach seems to make the most sense?

LG5 **P8.11** Assume you've generated the following information about the shares of Bufford's Burger Barns: the company's latest dividends of $4 a share are expected to grow to $4.32 next year, to $4.67 the year after that and to $5.04 in year 3. In addition, the price of the shares is expected to rise from $56.50 (its current price) to $77.75 in three years.

a. Use the dividends-and-earnings model and a required return of 15% to find the value of the shares.
b. Use the IRR procedure to find the share's expected return.
c. Given that dividends are expected to grow indefinitely at 8%, use a 15% required rate of return and the dividend valuation model to find the value of the share.
d. Assume dividends in year 3 actually amount to $5.04, the dividend growth rate stays at 8%, and the required rate of return stays at 15%. Use the dividend valuation model to find the price of the share at the end of year 3. [*Hint:* In this case, the value of the share will depend on dividends in year 4, which equal $D_3 \times (1 + g)$.] Do you note any similarity between your answer here and the forecasted price of the share ($77.75) given in the problem? Explain.

LG6 **P8.12** Let's assume that you're thinking about buying shares in Coast Electronics. So far in your analysis, you've uncovered the following information: the share pays annual dividends of $2.50 (and that's not expected to change within the next few years—*nor are any of the other variables*). It trades at a P/E ratio of 18 times earnings and has a beta of 1.15. In addition, you plan on using a risk-free rate of 7% in the CAPM, along with a market return of 14%. You would like to hold the share for three years, at the end of which time you think the EPS will peak at about $7 a share. Given that the share currently trades at $70, use the IRR approach to find this security's expected return. Now use the present-value (dividends-and-earnings) model to put a price on this share. Does this look like a good investment to you? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG6 **P8.13** The price of Consolidated Everything is now $75. The company pays no dividends. Ms Bossard expects the price three years from now to be $100 per share. Should Ms Bossard buy Consolidated Everything if she desires a 10% rate of return? Explain.

LG5 **P8.14** This year, Southwest Light and Gas (SL&G) paid its shareholders an annual dividend of $3 a share. A major brokerage firm recently put out a report on SL&G stating that, in its opinion, the company's annual dividends should grow at the rate of 10% per year for each of the next five years and then level off and grow at the rate of 6% a year thereafter.

a. Use the variable-growth DVM and a required rate of return of 12% to find the maximum price you should be willing to pay for this share.

b. Redo the SL&G problem in part **a**, this time assuming that after year 5, dividends stop growing altogether (for year 6 and beyond, $g = 0$). Use all the other information given to find the share's intrinsic value.

c. Contrast your two answers and comment on your findings. How important is growth to this valuation model?

LG5 **P8.15** Assume there are three companies that in the past year paid exactly the same annual dividend of $2.25 a share. In addition, the future annual rate of growth in dividends for each of the three companies has been estimated as follows:

Caravan World	Family Hotels	Tropical Resort	
$g = 0$ (i.e. dividends are expected to remain at $2.25/share)	$g = 6\%$ (for the foreseeable future)	Year 1	$2.53
		2	$2.85
		3	$3.20
		4	$3.60
		Year 5 and beyond: $g = 6\%$	

Assume also that as the result of a strange set of circumstances, these three companies all have the same required rate of return ($k = 10\%$).

a. Use the appropriate DVM to value each of these companies.

b. Comment briefly on the comparative values of these three companies. What is the major cause of the differences among these three valuations?

LG6 **P8.16** New Millennium Company's share sells at a P/E ratio of 21 times earnings. It is expected to pay dividends of $2 per share in each of the next five years and to generate an EPS of $5 in year 5. Using the dividends-and-earnings model and a 12% discount rate, compute the share's justified price.

LG6 **P8.17** A particular company currently has sales of $250 million; sales are expected to grow by 20% next year (year 1). For the year after next (year 2), the growth rate in sales is expected to equal 10%. Over each of the next two years, the company is expected to have a net profit margin of 8% and a payout ratio of 50% and to maintain the shares outstanding at 15 million shares. The share always trades at a P/E ratio of 15 times earnings, and the investor has a required rate of return of 20%. Given this information:

a. Find the share's intrinsic value (its justified price).

b. Use the IRR approach to determine the share's expected return, given that it is currently trading at $15 per share.

c. Find the holding period returns for this share for year 1 and for year 2.

LG3 LG5 **P8.18** Assume a major investment service has just given Oasis Electronics its highest investment rating, along with a strong buy recommendation. As a result, you decide to take a look for yourself and to place a value on the company's shares. Here's what you find: this year, Oasis paid its shareholders an annual dividend of $3 a share, but because of its high rate of growth in earnings,

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

its dividends are expected to grow at the rate of 12% a year for the next four years and then to level out at 9% a year. So far, you've learned that the share has a beta of 1.80, the risk-free rate of return is 6%, and the expected return on the market is 11%. Using the CAPM to find the required rate of return, put a value on this share.

LG5 **P8.19** Consolidated Software doesn't currently pay any dividends but is expected to start doing so in four years. That is, Consolidated will go three more years without paying any dividends, and then is expected to pay its first dividend (of $3 per share) in the fourth year. Once the company starts paying dividends, it's expected to continue to do so. The company is expected to have a dividend payout ratio of 40% and to maintain a return on equity of 20%. Based on the DVM, and given a required rate of return of 15%, what is the maximum price you should be willing to pay for this share today?

LG5 **P8.20** Assume you obtain the following information about a certain company:

Total assets	$50 000 000
Total equity	$25 000 000
Net income	$3 750 000
EPS	$5.00 per share
Dividend payout ratio	40%
Required return	12%

Use the constant-growth DVM to place a value on this company's share.

LG6 **P8.21** You're thinking about buying some shares in Affiliated Computers and want to use the P/E approach to value the shares. You've estimated that next year's earnings should come in at about $4.00 a share. In addition, although the share normally trades at a relative P/E ratio of 1.15 times the market, you believe that the relative P/E ratio will rise to 1.25, whereas the market P/E ratio should be around 18.5 times earnings. Given this information, what is the maximum price you should be willing to pay for this share? If you buy this share today at $87.50, what rate of return will you earn over the next 12 months if the price of the share rises to $110.00 by the end of the year? (Assume that the share doesn't pay any dividends.)

LG6 **P8.22** AviBank Plastics generated an EPS of $2.75 over the last 12 months. The company's earnings are expected to grow by 25% next year, and because there will be no significant change in the number of shares outstanding, EPS should grow at about the same rate. You feel the share should trade at a P/E ratio of around 30 times earnings. Use the P/E approach to set a value on this share.

LG6 **P8.23** Newco is a young company that has yet to make a profit. You are trying to place a value on the share, but it pays no dividends and you obviously cannot calculate a P/E ratio. As a result, you decide to look at other shares in the same industry as Newco to see if you can find a way to value this company. You find the following information:

	Per-Share Data ($)			
	Newco	Adolescentco	Middle-Ageco	Oldco
Sales	10	200	800	800
Profit	−10	10	60	80
Book Value	−2	2	5	8
Market Value	?	20	80	75

Estimate a market value for Newco. Discuss how your estimate could change if Newco was expected to grow much faster than the other companies.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG4 **P8.24** World Wide Web Wares (4W, for short) is an online retailer of small kitchen appliances and utensils. The firm has been around for a few years and has created a nice market niche for itself. In fact, it actually turned a profit last year, albeit a fairly small one. After doing some basic research on the company, you've decided to take a closer look. You plan to use the price/sales ratio to value the share, and you have collected P/S multiples on the following Internet retailer shares:

Company	P/S Multiples
Amazing.com	4.5
Really Cooking.com	4.1
Fixtures & Appliances Online	3.8

Find the *average P/S ratio* for these three firms. Given that 4W is expected to generate $40 million in sales next year, and will have 10 million shares outstanding, use the average P/S ratio you computed above to put a value on 4W's share.

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 8.1 CHRIS LOOKS FOR A WAY TO INVEST HIS NEWFOUND WEALTH

LG1 LG2 LG4 Chris Norton is a young TV writer who is well on his way to television superstardom. After writing several successful television specials, he was recently named the head writer for one of TV's top-rated sitcoms. Chris fully realises that his business is a fickle one and, on the advice of his dad and manager, has decided to set up an investment program. Chris will earn about half a million dollars this year. Because of his age, income level and desire to get as big a bang as possible from his investment dollars, he has decided to invest in speculative, high-growth shares.

Chris is currently working with a respected broker and is in the process of building up a diversified portfolio of speculative shares. The broker recently sent him information on a hot new issue. She advised Chris to study the numbers and, if he likes them, to buy as many as 1000 shares. Among other things, corporate sales for the next three years have been forecasted as follows:

Year	Sales (in millions)
1	$22.5
2	35.0
3	50.0

The firm has 2.5 million shares outstanding. They are currently being traded at $70 a share and pay no dividends. The company has a net profit rate of 20%, and its share has been trading at a P/E of around 40 times earnings. All these operating characteristics are expected to hold in the future.

QUESTIONS

1. Looking first at the share:
   a. Compute the company's net profits and EPS for each of the next three years.
   b. Compute the price of the share three years from now.
   c. Assuming that all expectations hold up and that Chris buys the share at $70, determine his expected return on this investment.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

d. What risks is he facing by buying this share? Be specific.
e. Should he consider the share a worthwhile investment candidate? Explain.

2. Looking at Chris's investment program in general:
a. What do you think of his investment program? What do you see as its strengths and weaknesses?
b. Are there any suggestions you would make?
c. Do you think Chris should consider adding foreign shares to his portfolio? Explain.

Case Problem 8.2 AN ANALYSIS OF A HIGH-FLYING SHARE

LG 2 LG 6 Marc Dodier is a recent university graduate and a security analyst with the brokerage firm of Lippman, Shaft. Dodier has been following one of the hottest issues on the ASX: C&I Construction Supplies, a company that has turned in an outstanding performance lately and, even more importantly, has exhibited excellent growth potential. It has 5 million shares outstanding and pays a nominal annual dividend of 5 cents per share. Dodier has decided to take a closer look at C&I to see whether it still has any investment play left. Assume the company's sales for the past five years have been as follows:

Year	Sales (in millions)
2006	$10.0
2007	12.5
2008	16.2
2009	22.0
2010	28.5

Dodier is concerned with the future prospects of the company, not its past. As a result, he pores over the numbers and generates the following estimates of future performance:

Expected net profit margin	12%
Estimated annual dividends per share	5¢
Number of shares outstanding	No change
P/E ratio at the end of 2011	35
P/E ratio at the end of 2012	50

QUESTIONS

1. Determine the average annual rate of growth in sales over the past five years. (Assume sales in 2005 amounted to $7.5 million.)
a. Use this average growth rate to forecast revenues for next year (2011) and the year after that (2012).
b. Now determine the company's net earnings and EPS for each of the next two years (2011 and 2012).
c. Finally, determine the expected future price of the share at the end of this two-year period.

2. Because of several intrinsic and market factors, Dodier feels that 25% is a viable figure to use for a desired rate of return.
a. Using the 25% rate of return and the forecasted figures you came up with in question **1**, compute the share's justified price.
b. If C&I is currently trading at $32.50 per share, should Dodier consider the share a worthwhile investment candidate? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Excel with Spreadsheets

Fundamental to the valuation process is the determination of the intrinsic value of a security, where an investor calculates the present value of the expected future cash benefits of the investment. Specifically, in the case of shares, these future cash flows are defined by expected future dividend payments and future potential price appreciation. A simple but useful way to view share value is that it is equal to the present value of all expected future dividends it may provide over an infinite time horizon.

Based on this latter concept, the dividend valuation model (DVM) has evolved. It can take on any one of three versions—the zero-growth model, the constant-growth model or the variable-growth model.

Create a spreadsheet that applies the variable-growth model to predict the intrinsic value of Rhyhorn Company shares. Assume that dividends will grow at a variable rate for the next three years (2010, 2011 and 2012). After that, the annual rate of growth in dividends is expected to be 7% and stay there for the foreseeable future. Starting with the latest (2009) annual dividend of $2.00 per share, Rhyhorn's earnings and dividends are estimated to grow by 18% in 2010, by 14% in 2011 and by 9% in 2012, before dropping to a 7% rate. Given the risk profile of the company, assume a minimum required rate of return of at least 12%. The spreadsheet for Table 8.4, which you can view on www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885 is a good reference for solving this problem.

Questions

1. Calculate the projected annual dividends over the years 2010, 2011 and 2012.
2. Determine the present value of dividends during the initial variable-growth period.
3. What do you believe the price of Rhyhorn shares will be at the end of the initial growth period (2012)?
4. Having determined the expected future price of Rhyhorn shares in part **3**, discount the price of the share back to its present value.
5. Determine the total intrinsic value of Rhyhorn shares based on your calculations above.

Much analysis is devoted to the study of the market. Even more analysis is performed for each security traded on the market. Investors in individual shares expect the total return on the shares to meet or exceed their required return. Forming expectations for total return requires the investor to derive some estimate of future cash flows. These cash flows include both dividend income and capital gains from price appreciation. Information on both dividends and earnings is needed to derive an intrinsic value. Investors can benefit from the work done by investment specialists. The sites below contain a great deal of information from investment specialists and writers.

WEBSITE	URL
Australian Associated Press	www.aap.com.au
Australian Technical Analysts Association	www.ataa.com.au
Bloomberg Australia	www.bloomberg.com/news/australia-newzealand
Morningstar	www.morningstar.com.au
The Inside Trader	www.theinsidetrader.com.au
Smart Investor	www.afrsmartinvestor.com.au

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER 9

Technical Analysis, Market Efficiency and Behavioural Finance

LEARNING GOALS

After studying this chapter, you should be able to:

- **LG1** Describe the characteristics of an efficient market, explain what market anomalies are, and note some of the challenges that investors face when markets are efficient.
- **LG2** List four 'decision traps' that may lead investors to make systematic errors in their investment decisions.
- **LG3** Explain how behavioural finance links market anomalies to investors' cognitive biases.
- **LG4** Discuss the purpose of technical analysis and explain why the performance of the market is important to share valuation.
- **LG5** Describe some of the approaches to technical analysis, including, among others, the Dow theory, moving averages, charting and various indicators of the technical condition of the market.
- **LG6** Compute and use technical trading rules for individual shares and the market as a whole.

In the TV show *Who Wants to be a Millionaire?*, contestants answer a series of trivia questions for a $1 million prize. One wrong answer sends the contestant home empty-handed, but when contestants are unsure of the answer to a question, they may use one of several 'lifelines'. One lifeline permits a phone call to a friend for help. The success rate of these 'phone a friend' calls has been about 65%.

That success rate pales in comparison to the 91% success rate achieved by another of the show's lifelines—a simple poll of the audience. The poll works because members of the audience who do not know the answer simply guess, spreading their answers randomly across the four possible choices. The responses of audience members who know the answer cluster on the correct choice, which causes the correct response to receive the greatest number of votes. Thus, it is a rare contestant who ignores the wisdom of the audience and survives in the game.

What does this have to do with investments? Estimating the value of a company's shares is more difficult than answering a trivia question. Many variables affect a share's value, and relevant information about those variables becomes available to different investors at different times. Moreover, thousands of professional investors follow the sharemarket, ferreting out information to gain an advantage over other investors. According to a famous theory, known as the *efficient markets hypothesis*, the end result of all this analysis is that the market price is right, just as the audience poll tends to be right most of the time. The market price of a share reflects everything that investors know about that security, and the collective information known to the market is greater than any single investor can replicate. Thus, when an investor buys a share, thinking that the market price doesn't reflect the share's true value, it's equivalent to a contestant on *Who Wants to be a Millionaire?* rejecting the results of the audience poll. The evidence is clear that such a strategy succeeds a very small percentage of the time, and if markets are efficient, investors would be wise to think twice before betting that the market has overvalued or undervalued a particular share.

(*Source:* Adapted from James Surowiecki 2004, *The Wisdom of Crowds*, Random House, <www.randomhouse.com>.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Efficient Markets

LG 1

If a drunk were abandoned in an open field at night, where would you begin to search for him the next morning? The answer, of course, is at the spot where he was left the night before, because there's no way to predict where he will go. To some analysts, share prices seem to wander about in a similar fashion. Observations of such erratic movements have led to a body of evidence called the **random walk hypothesis**. Its followers believe that price movements are unpredictable and therefore security analysis will not help to predict future market behaviour. Although random price movements might seem to be a sign of a market gone haywire, it is actually a natural consequence of a financial market operating with a high degree of efficiency.

random walk hypothesis
the theory that share price movements are unpredictable, so there's no way to know where prices are headed.

efficient market
a market in which securities reflect all possible information quickly and accurately.

An **efficient market** is one in which security prices fully reflect all available information. This concept holds that investors quickly incorporate all available information into their opinions about what a particular share is worth. Because different investors have access to different information, some will view the share as being overvalued, and others will see it as undervalued. Share prices move in response to investors' shifting views, which in turn are influenced by the arrival of new information. But by definition, *new information* is information that investors did not previously have and could not anticipate. In other words, because prices respond to new information, and new information is itself unpredictable, share prices will move in a seemingly random fashion as well.

An example may help cement these ideas. Toy retailers have highly seasonal sales patterns, with most of their sales, and hence most of their profits, coming during the Christmas season. Every year in their half-yearly reports, these companies show huge jumps in sales and earnings in this period. Do the share prices of these companies behave in the same way, rising when sales peak? The answer is no, because investors have witnessed the seasonal patterns in the past, so they know to anticipate Christmas jumps in sales and profits.

Efficient markets advocates take this argument further by arguing that even if share prices *did* exhibit recurring patterns, those patterns couldn't last for long. Suppose, for example, that the toy shares increased every year around Christmas. Investors anticipating a Christmas price run-up would buy the share a few weeks before Christmas, hoping to earn unusually high short-term returns. But the surge in demand for shares ahead of Christmas would cause the price to increase earlier than it had in past years, and the seasonal pattern would be gone.

When financial experts say that share prices follow a random walk, they mean that no matter what patterns seem to appear when we examine the behaviour of past share patterns, prices move essentially at random. The important implication of this theory is that trying to predict the future direction of a share's price based on how that share has performed in the past is futile. Investors who try to spot recurring trends in the sharemarket and use those trends to decide when to buy and sell are not likely to consistently outperform investors who adopt a more passive, buy and hold approach—at least that's the theory.

efficient markets hypothesis (EMH)
a basic theory of the behaviour of efficient markets, in which there are a large number of knowledgeable investors who react quickly to new information, causing securities prices to adjust quickly and accurately.

Levels of Market Efficiency

The **efficient markets hypothesis** (EMH) is concerned with *information*—not only the type and source of information, but also the quality and speed with which it is disseminated among investors and reflected in asset prices. The more information that is incorporated into share prices, the more efficient the market becomes. One way of characterising the extent to which markets are efficient is to define different levels of

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

efficiency corresponding to different types of information that prices may reflect. These levels of market efficiency are known as the weak form, the semi-strong form and the strong form.

weak form (EMH)
a form of the EMH holding that past data on share prices is of no use in predicting future prices.

Weak Form The **weak form of the EMH** holds that share prices fully reflect any relevant information that can be obtained from an analysis of past price movements. Go back to the example of the toy retailer share. If toy shares exhibited seasonal patterns in the past, traders would learn about them, begin to trade ahead of them, and thereby eliminate them. In short, the weak form of the EMH says that past data on share prices is of no use in predicting future price changes. If prices follow a random walk, then price changes over time are random. Tomorrow's price change is unrelated to today's, yesterday's or that of any other day.

The earliest research on the weak form of market efficiency appeared to confirm the prediction that prices moved at random. Using databases that contained the past prices of listed shares in the United States, researchers constructed a variety of 'trading rules', such as buying a share when it hit a 52-week low, and then tested these rules using historical information to see what returns investors following these rules might have earned. The results were encouraging to theorists, but not to traders—none of the trading rules earned better returns than investors could earn by purchasing a diversified portfolio and holding it.

semi-strong form (EMH)
a form of the EMH holding that abnormally large profits cannot be consistently earned using publicly available information.

Semi-Strong Form The **semi-strong form of the EMH** asserts that share prices fully reflect all relevant information that investors can obtain from public sources. This means that investors cannot consistently earn abnormally high returns using publicly available information such as annual financial reports and other required reports, analyst recommendations, product reviews and so on. To illustrate the idea, suppose that you see that a particular company has just posted its latest financial results online. You read the report and see that the company reported an unexpected surge in profits in the most recent half-year. Should you call your broker and buy some shares? The semi-strong form of the EMH says that by the time you download the annual report, read it and call your broker, the market price of the share will have already increased, reflecting the company's latest good news.

Many tests of semi-strong efficiency have examined how share prices respond before and after particular types of corporate announcements. A famous study involved stock splits. A stock split does not change the value of a company, so the value of the share should not be affected by a stock split. The research indicated that there are sharp increases in the price of a share *before* a stock split, but the changes after the split are random. Investors, therefore, cannot gain by purchasing shares on or after the announcement of a split. To earn abnormal profits they would have to purchase before the split is announced, but then again, how would investors know that a split announcement is coming? Almost as soon as the announcement is made public, the market has already incorporated into the price any favourable information associated with the split.

Other research has examined the effects of major events on share prices. One academic study* (published in 2000) looked at the impact on the Australian share-market of the announcement in 1993 that Sydney would host the 2000 Olympic Games. Sydney was an unexpected winner, and so content of the announcement was

* Berman, Brooks and Davidson 2000, 'The Sydney Olympic Games Announcement and Australian stock market reaction', *Applied Economic Letters*, Vol. 200, No. 7, pp. 781–4.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

unexpected by the market. Given the keen competition between rival cities bidding for the Olympics, it might be expected that the winning city would benefit economically from hosting the games, and that the present value of this expected benefit would be impounded in share prices at the time of the announcement. An economic impact report commissioned prior to the announcement anticipated substantial benefits from winning the rights to host the Olympics, both economic and non-economic, focusing particularly on the expected increase in tourism across the whole country.

However, the study found that there was no overall impact on the Australian sharemarket at the time of the announcement. There was a positive price impact for some companies in certain industries—those involving building materials, developers and contractors, engineering and miscellaneous services. Further, the price reaction was confined to companies based in New South Wales, in which Sydney is located. This is consistent with the economic boost from the Olympics being in infrastructure and development in Sydney.

At the time that the study was undertaken, the longer-term economic results of Sydney hosting the Olympic Games were not clearly known. Subsequent news has revealed that the market got it right: the anticipated economic benefits from tourism were short-lived, and the overall impact of the Olympics on the Australian economy was negative.

The overwhelming evidence indicates that share prices react accurately within minutes, if not seconds, to any important new information. Certainly, by the time an investor reads about the event in the newspaper, the share price has almost completely adjusted to the news. Even hearing about the event on the radio or television usually allows too little time to complete the transaction in time to make an abnormal profit.

strong form (EMH)
a form of the EMH that holds that there is no information, public or private, that allows investors to consistently earn abnormal profits.

Strong Form The **strong form of the EMH** holds that there is no information, public or private, that allows investors to consistently earn abnormal returns. It states that share prices rapidly adjust to any information, even if it isn't available to every investor.

One type of private information is the kind obtained by corporate insiders, such as officers or directors of a corporation. They have access to valuable information about major strategic and tactical decisions the company makes. They also have detailed information about the financial state of the company that may not be available to other shareholders. Insiders are generally prohibited from trading the shares of their employer prior to major news releases. In Australia, the ASX examines the trading in the shares and derivatives of any company that subsequently has made a significant material announcement to the market. Most studies of corporate insiders find that their trades are particularly well timed, meaning that they tend to buy before significant price increases and sell prior to big declines. This, of course, is contrary to what you'd expect to find if the strong form of the EMH were true.

Insiders and other market participants occasionally have inside—non-public—information that they obtained or traded on *illegally*. With this information, they can gain an unfair advantage that permits them to earn an excess return. Clearly, those who violate the law when they trade have an unfair advantage. Empirical research has confirmed that those with such inside information do indeed have an opportunity to earn an excess return—but there might be an awfully high price attached, such as spending time in prison, if they're caught.

INVESTOR FACTS

IT'S HARD TO BEAT THE MARKET—That's pretty much the message that the EMH has for investors. As such, trading in and out of securities wouldn't seem to make much sense. And that's exactly what was found in a recent study of over 66 000 investors, grouped according to annual portfolio turnover (how much of the portfolio the investor replaces each year). Buy-and-hold investors, with turnovers of less than 2% a year, earned annual returns of 18.5%. On the other end of the spectrum, the most active traders, with 258% portfolio turnover, averaged only 11.4% per year, a full 7 percentage points less than the more conservative, buy-and-hold investors.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Market Anomalies

market anomalies
irregularities or deviations from the behaviour one would expect in an efficient market.

Despite considerable evidence in support of the EMH, researchers have uncovered some patterns that seem inconsistent with the theory. Collectively, this body of puzzling evidence is known as **market anomalies**, a name that itself suggests that there is less evidence contradicting the EMH than there is in support of it. What all of these anomalies have in common is that they reveal patterns or trading strategies that, at least in hindsight, earned higher returns than would be expected in efficient markets.

Calendar Effects One widely cited anomaly is the so-called *calendar effect*, which holds that share returns may be closely tied to the time of the year or the time of the week. That is, certain months or days of the week may produce better investment results than others. The most famous of the calendar anomalies is the *January effect*, which is a documented tendency for small-cap shares to outperform large-cap shares by an unusually wide margin in the month of January in the United States. One possible explanation for this pattern has to do with taxes. Under certain conditions, investors can deduct investment losses when calculating their income taxes. Thus, there is an incentive for investors to sell shares that have gone down in value during the year, and investors who recognise that incentive are particularly likely to sell in December as the tax year comes to a close. Think about what happens to the market capitalisation of a company when its share falls during the year—the market cap gets smaller. Thus, if investors have a tax incentive to sell their loser shares in December, and if these shares by definition tend to be smaller than average, then their prices may be temporarily depressed due to December tax selling, and they may rebound in January. As plausible as this explanation may sound, there is at best mixed evidence that it can account for the puzzling behaviour of small shares in January.

The evidence on the calendar effect in Australia is not as clear-cut. One academic paper** examined three well-known calendar effects—day-of-the-week, turn-of-the-month and month-of-the-year—over 50 years. The results provide support for the existence of such calendar effects in Australia, with Tuesday, September and the second trading day of the month the most significant. What this means, and why it occurs, is less clear! Also, there is evidence of change in these patterns over the period, with day-of-the-week effects becoming less important in the post-1987 crash period.

Small-Firm Effect Another anomaly is the *small-firm effect*, or size effect, which states that the size of the company has a bearing on the level of share returns. Indeed, several studies have shown that small companies (or small-cap shares) earn higher returns than large-cap shares (and not just in January), even after taking into account the higher betas typical of most small companies. This tendency has been documented in many sharemarkets around the world.

Post-Earnings Announcement Drift (or Momentum) Another market anomaly has to do with how share prices react to *earnings announcements*. Obviously, earnings announcements contain important information that should, and does, affect share prices. However, much of the information has already been anticipated by the market, and so—if EMH is correct—prices should react only to the 'surprise' portion of the announcement. Studies have shown that share prices do increase (decrease) quickly when an earnings announcement is surprisingly good (bad), but prices tend to 'drift' in

** Worthington 2008, 'The decline of calendar seasonality in the Australian stock exchange, 1958–2005', *Annals of Finance*, Vol. 6, No. 3.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

the same direction for many weeks after the announcement. That is, when a company has an especially good earnings report, its share price not only shoots up immediately, it keeps drifting up for many weeks. This seems to indicate that investors underreact to the information in the announcement—they don't realise just how good the good news is!

A slight variation on this story is known as the *momentum anomaly*. In physics, momentum refers to the tendency of an object in motion to continue moving or the tendency of an object at rest to remain at rest. Applied to shares, momentum refers to the tendency for shares that have gone up recently to keep going up, or the tendency for shares that have gone down recently to continue going down. The connection to earnings announcement drift is easy to see. When a company has a particularly good result, it is common for some of the good news to leak out into the market prior to the official earnings announcement. So leading up to the earnings release, it is common to see the share price moving up. As we've already discussed, when the company releases the news that it has had a very strong performance, the price goes up more, but then it continues to drift up for weeks. Taking the entire pattern into account, we observe that before a company releases very good earnings news, its share price has gone up, and then it keeps going up after the earnings announcement. Hence, these shares display positive momentum. The same thing happens in reverse for companies that have particularly bad results. Some of the bad news leaks out early, and the share goes down, but then the share price continues to go down after the announcement.

The Value Effect According to the *value effect*, the best way to make money in the market is to buy shares that have relatively low prices relative to some measure of fundamental value such as book value or earnings. An investor following a value strategy might calculate the P/E ratio or the ratio of market value to book value for many shares, then buy the shares with the lowest ratios (and perhaps short-sell the shares with high P/E or market/book ratios). Studies have shown that, on average, value shares outperform shares with high P/E or market/book ratios (so-called growth shares). This pattern has repeated itself decade after decade in most sharemarkets around the world.

Possible Explanations

Each new discovery of an anomaly that appears to violate the EMH prompts a flurry of research that offers rational explanations for the pattern observed. The most common explanation for market anomalies is that the shares that earn abnormally high returns are simply riskier than other shares, so the higher returns on these shares reflect a risk premium rather than mispricing by the market. For example, most academics and practitioners would agree that small companies are riskier than large companies, so it is not surprising that small shares earn higher returns. The real question is, how much riskier are small companies, and how large should the risk premium be on those securities? According to the CAPM, if a small share has a beta of 2.0 and a large share has a beta of 1.0, the small share should earn roughly twice the risk premium (over Treasury bills) that the large share earns. The reason that the small-firm effect is known as an anomaly is that small shares seem to earn higher returns than their betas can justify. Believers in the EMH argue that beta is an imperfect measure of risk and that if a better risk measure were available, the difference in returns between small and large shares could be fully attributed to differences in risk.

Another explanation for market anomalies is that of chance. Even in an efficient market where prices move essentially at random, some trading patterns or events are

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

associated with historically earned abnormally high rates of return. Whether those trading patterns continue is an open question. For example, one of the more amusing anomalies in Australia is the 'Melbourne Cup effect'. The Melbourne Cup is a horse race that has been run on the first Tuesday in November in Melbourne for over 100 years, and is celebrated as an unofficial national day by people all over Australia, who take a break from their work day to watch the race, drink champagne and gamble on the outcome. While the day is a public holiday in Melbourne, in all other parts of the country it is a work day, but the exuberance seems to have translated into irrationally positive market behaviour. Share returns in Australia on Melbourne Cup Day over a 45-year period have been shown to be significantly higher than on other Tuesdays in November, all other Tuesdays and all other days. But would you bet on it continuing? Some EMH advocates believe that most market anomalies are similarly just a product of random chance. However, this explanation is less persuasive in the face of evidence that anomalies such as the small-firm effect and the value effect appear in most markets around the world.

The discovery of these and other anomalies led to the development of an entirely new way of viewing the workings of financial markets that has come to be known as **behavioural finance**. In contrast to traditional finance, which starts with the assumption that investors, managers and other actors in financial markets are rational, behavioural finance posits that market participants make systematic mistakes, and that those mistakes are inextricably linked to cognitive biases that are hard-wired into human nature. We now turn to a discussion of the basic tenets of behavioural finance and how they may help explain market anomalies.

behavioural finance
the body of research into the role that emotions and other subjective factors play in investment decisions.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

9.1 What is the *random walk hypothesis*, and how does it apply to shares? What is an *efficient market*? How can a market be efficient if its prices behave in a random fashion?

9.2 Explain why it is difficult, if not impossible, to consistently outperform an efficient market.

a. Does this mean that high rates of return are not available in the sharemarket?
b. How can an investor earn a high rate of return in an efficient market?

9.3 What are *market anomalies* and how do they come about? Do they support or refute the EMH? Briefly describe each of the following:

a. The January effect
b. The size effect
c. The value effect

Behavioural Finance: A Challenge to the Efficient Markets Hypothesis

LG2 LG3

For more than 30 years, the efficient markets hypothesis (EMH) has been an influential force in financial markets. The notion that asset prices fully reflect all available information is supported by a large body of academic research. In practitioner circles, supporters of market efficiency have developed a special type of managed fund known as an *index* fund. Managers of index funds don't try to pick individual shares or bonds, because they assume that the market is efficient. They recognise that any time and energy spent researching individual securities will merely serve to increase the fund's expenses, which will drag down investors' returns.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Although considerable evidence supports the concept of market efficiency, an increasing number of academic studies have begun to cast doubt on the EMH. This research documents various anomalies and draws from research on cognitive psychology to offer explanations for the anomalies. One notable event that acknowledged the importance of this field was the awarding of the 2002 Nobel Prize in economics to Daniel Kahneman, whose work integrated insights from psychology and economics. In addition to academic studies, some professional money managers are also incorporating concepts from behavioural finance into their construction and management of portfolios.

Investor Behaviour and Security Prices

Researchers in behavioural finance believe that investors' decisions are affected by a number of psychological biases that lead investors to make systematic, predictable mistakes in certain decision-making situations. These mistakes, in turn, may lead to predictable patterns in asset prices that create opportunities for other investors to earn abnormally high profits without accepting abnormally high risk. Let's now take a look at some of the behavioural factors that might influence the actions of investors.

Overconfidence and Self-Attribution Bias research in psychology provides overwhelming evidence that, on average, people tend to exhibit *overconfidence*, putting too much faith in their own ability to perform complex tasks. Try this experiment. The next time you are in a large group, ask people to indicate whether they believe they have above-average, average or below-average skill in driving a car. What you will probably find is that a majority of the group believes that they have above-average ability, and almost no one will lay claim to having below-average skill. But simply by the definition of average, some people have to be above average and some must be below average.

Closely linked to overconfidence is a phenomenon known as *self-attribution bias*. Self-attribution bias roughly means that when something good happens, individuals attribute it to actions that they have taken, but when something bad happens, they attribute it to bad luck or external factors beyond their control. The connection to overconfidence is straightforward. An individual takes an action or makes a decision that leads to a favourable outcome. Self-attribution bias causes the individual to discount the role that chance may have played in determining the outcome and to put too much emphasis on his or her actions as the cause. This causes the individual to become overconfident.

What effects do overconfidence and self-attribution bias have in the investments realm? Consider an individual investor, or even a professional money manager, who analyses shares to determine which ones are overvalued and which are bargains. Suppose in a particular year the investor's portfolio earns very high returns. Perhaps the high returns are largely due to a booming sharemarket, but perhaps in addition the investor's share picks performed even better than the overall market. Is this the result of good fortune or good analysis? It would take many years to be sure, but most investors would probably attribute the favourable outcome to their own investing prowess. What is the consequence if investors mistakenly attribute investment success to their own skill? One study found that investors whose portfolios had outperformed the market in the past subsequently increased their trading activity. After beating the overall market average by 2% per year for several years, these

INVESTOR FACTS

WOMEN MAKE FEWER MISTAKES!—Could it be? Women make fewer investment mistakes than men, and make them less often—even though, on average, they tend to enjoy investing less than men. Well, that's what they say, according to the results of a US national survey conducted by Merrill Lynch. Here are some of the findings:

	Admitted making mistake	
Action	Men	Women
• Holding a losing investment too long	47%	35%
• Waiting too long to sell a winner	43%	28%
• Allocating too much to one investment	32%	23%
• Buying a hot investment without doing research	24%	13%
• Trading securities too often	12%	5%

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

investors increased their trading activity more than 70%. The increase in trading led to much higher transactions costs and much lower returns. The same group of investors trailed the market by 3% per year after increasing their trading activity.

This tendency is not confined to individual investors. A recent study found that CEOs exhibit similar behaviour when they undertake acquisitions of other companies. When a CEO acquires another company and the acquisition target performs well, the CEO is more likely to acquire another company. The CEO is also more likely to buy more shares in his or her employer's company prior to the next acquisition. But these second acquisitions actually destroy shareholder value on average. In other words, it appears that CEOs become overconfident regarding their ability to acquire other companies and run them profitably.

Loss Aversion Here is an interesting series of questions. Suppose you have just won $8500 in a game of chance. You can walk away with your winnings or you can risk them. If you take the risk, there is a 90% chance that you will win an additional $1500, but there is a 10% chance that you will lose everything. Would you walk away or gamble? Most people who are asked this question say that they would take the $8500—the sure thing. They say this even though the expected value from the additional gamble is $500. That is:

$$\text{Expected value} = (\text{Probability of gain}) \times (\text{Amount of gain}) - (\text{Probability of loss}) \times (\text{Amount of loss}) = 0.90 \times \$1500 - 0.10 \times \$8500 = \underline{\$500}$$

In this case, the decision to take the $8500 indicates that the individual making that choice is risk averse. The risk of losing $8500 is not worth the expected $500 gain.

However, if we reframe the question, most people respond differently. Suppose you have already lost $8500 in a game of chance. You can walk away and cut your losses, or you can gamble again. If you gamble, there is a 90% chance that you will lose $1500, but there is a 10% chance that you will win $8500, thus entirely reversing your initial loss. When confronted with this choice, most people say that they will take the risk to try to 'get even', even though the expected value of this gamble is –$500. In this case, people are exhibiting risk-seeking behaviour. They are accepting a risk that they do not have to take, and it is a risk that has a negative expected return.

loss aversion
the tendency to exhibit risk-averse behaviour when confronting gains and risk-seeking behaviour when confronting losses.

In behavioural finance, the tendency to exhibit risk-averse behaviour when confronting gains and risk-seeking behaviour when confronting losses is called **loss aversion**. Loss aversion simply means that people feel the pain of loss more acutely than the pleasure of gain. In an investments context, loss aversion can lead people to hold onto investments that have lost money longer than they should.

Representativeness

Overreaction In an interesting experiment, six people were asked to flip a coin 20 times and count the number of heads that came up. Another group of six was asked to imagine flipping a coin 20 times and write down the sequence of heads and tails that might occur. The table below shows the results reported by each group.

Group	Subject	Number of Heads	Group	Subject	Number of Heads
A	1	10	B	1	6
	2	10		2	13
	3	8		3	7
	4	10		4	11
	5	10		5	8
	6	10		6	14

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Looking at the responses from individuals in each group, which group do you think actually flipped coins, and which imagined doing so?

The answer is that group A only imagined flipping coins. Notice that almost everyone in the group said they expected to obtain 10 heads in 20 flips, but in the group that actually tossed the coins, the number of heads varied widely, from 6 to 14. What accounts for the differences between the two groups?

Representativeness refers to cognitive biases that occur because people have difficulty thinking about randomness in outcomes. Subjects in group A assume (correctly) that the probability of obtaining a heads on any single flip of a coin is 50%, but they also assume (incorrectly) that this means that in 20 flips of a coin, it is very likely that heads will come up exactly 10 times. In other words, when people know the probability of a particular event occurring, they assume that a series of events will mirror that probability. As the results of group B's coin flips clearly show, it is rather unusual to obtain exactly 10 heads in 20 flips. A lot of other outcomes are quite likely.

A similar problem occurs when people do not know whether or to what extent randomness influences the outcomes of a series of events. That is, when people observe what appears to be a systematic pattern in a series of numbers or outcomes, they underestimate the likelihood that such a pattern might be the outcome of random chance, and they overestimate the likelihood that some underlying force will cause the pattern to repeat. In other words, they overreact to a series of similar events. For example, suppose a particular managed fund outperforms the S&P ASX 200 Index three years in a row. According to the EMH, earning above-average returns is more a matter of luck than of skill, so any particular investor (individual or professional) has roughly a 50% chance of beating the market in a particular year. With so many managed funds available, it would hardly be surprising to see some of these beat the market three years in a row, even if doing so is purely due to good luck, as the EMH would suggest. In fact, there is a great deal of evidence indicating that most professional managed fund managers fail to outperform the market average over long periods.

Even so, what do you think happens when one fund does well for three consecutive years? Research shows that investors overreact and pour money into successful funds, enriching the fund managers but not necessarily the fund investors. Apparently, many investors see a string of good performance and overestimate the likelihood that the trend will continue. Investors overreact to the past performance of funds, even though there is little objective evidence that past performance is a good predictor of future success.

This logic may provide a behavioural explanation for the value phenomenon cited earlier. Recall that value shares are shares that have low prices relative to earnings or book value. These shares generally display rather poor past performance—several years of declining prices is what puts these shares in the value category. Similarly, growth shares, companies with high prices relative to earnings or book value, generally have very good past performance. One of the earliest studies of the value effect studied the results of a very simple trading rule. Each year, researchers sorted all shares based on their cumulative performance in the previous three years. The trading rule was to buy the shares that had performed worst (the value shares) and sell short the shares that had performed best (the growth shares). Researchers discovered that this strategy earned returns that beat the market by 8% per year! Why would such a simple trading rule that anyone could follow work so well?

The researchers argued that it was due to representativeness. To be specific, they proposed that investors who watched particular shares decline in value for three years in a row eventually decided that the trend would continue indefinitely, so they bid the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

prices of these shares below their true values. Similarly, after watching other shares do very well several years in a row, investors naively assumed that this excellent performance would continue, and they bid up the prices of these shares above their true values. Over time, the companies that had been performing poorly surprised investors by rebounding, and the companies that had been earning spectacular returns failed to sustain that performance. As a result, past price trends reversed themselves, and value investors made money.

As before, individual investors are not the only participants in markets likely to be affected by representativeness. Consider a company that is looking to make an acquisition. What makes an acquisition target attractive? One criterion might be a company with recent increases in sales and earnings. Would acquirers be wise to pay a premium to acquire a company that has been growing faster than its competitors in recent years? The research evidence says no. There is almost no correlation between how fast companies have grown in the past and how fast they will grow in the future. In fact, that is a fundamental prediction of basic economic theory. When one company enjoys great success in a particular market, other companies will enter the industry. Competition makes it more difficult for companies to sustain the high growth that attracted new entrants in the first place. Yet there is ample evidence that managers do pay a larger premium when they acquire companies that experienced rapid growth prior to the acquisition, even though the prospect of sustaining the growth is low.

Underreaction In certain instances, representativeness can cause investors to *underreact* to new information. Consider this problem from statistics. On a table are 100 sacks, each of which contains 1000 poker chips. Forty-five of these sacks contain 70% black chips and 30% red chips. The other 55 bags hold 70% red chips and 30% black chips. If you pick one bag at random, what is the likelihood that it will contain mostly black chips?

Most people get this answer right. If 45 out of 100 bags contain mostly black chips, then the probability of picking a bag at random that has mostly black chips is 45%. Here is a much harder problem. Suppose you choose one bag at random and then take out 12 chips, without looking at the others. Of the 12 chips that you pull out, eight are black and four are red. What is the probability that the bag you picked contains mostly black chips?

Intuitively, people know that if the sample of 12 chips taken from the bag has a majority of black chips, then that means the probability that the bag has mostly black chips is higher than in the first problem where we simply select a bag at random. But how much higher? Few people come close to guessing that the probability is over 95%! In other words, people tend to underreact to the new information they obtain in the second version of the question.

Let's make an analogy between drawing poker chips out of a bag and reading companies' earnings announcements. Earnings announcements contain a mix of good and bad news that varies over time. When a company announces particularly good (or bad) news, representativeness may cause investors to underreact to the new information. That is, investors may not appreciate that good earnings news this period probably means that the likelihood of good news next period has gone up (and vice versa for bad news). That could explain the post-earnings announcement drift (or momentum) phenomenon discussed earlier.

A careful reader may object that we have asserted that representativeness can lead to both overreaction (in the case of value shares) and underreaction (in the case of momentum). Keep in mind that there are important differences in the nature of the information that investors are reacting to in each case. In the value phenomenon,

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

investors see a common string of information—several good years or several bad years in a row. This causes them to discount the role of chance in the outcome and overreact to the series of events. In the case of earning announcement drift, investors are responding to a single new piece of information that is extreme—particularly good or particularly bad. In that case, representativeness may lead investors to underreact to the new information they've received.

Narrow Framing Many people tend to analyse a situation in isolation, while ignoring the larger context. This behaviour is called *narrow framing*. A common example in investments relates to the asset allocation decisions that investors make in their retirement plans. Consider company A, which offers its employees two options for investing retirement savings—an equity fund and a bond fund. Company B also offers two options—an equity fund and a blended fund that holds 50% shares and 50% bonds. Research shows that most investors view this decision through the narrow frame of two choices, and they follow a simple guideline—put 50% into one fund and 50% into the other. But the narrow frame combined with the guideline produces an odd outcome. Employees of company A will follow an asset allocation of 50% shares and 50% bonds, while employees of company B, by putting half of their money into each fund, will wind up with 75% of their money in shares and 25% in bonds.

Belief Perseverance People typically ignore information that conflicts with their existing beliefs. For example, if they believe a share is good and purchase it, they later tend to discount any signals of trouble. In many cases, they even avoid gathering new information, for fear it will contradict their initial opinion. It would be better to view each share owned as a 'new' share when periodically reviewing a portfolio and to ask whether the information available at that time would cause you to buy or sell the share.

Implications of Behavioural Finance for Security Analysis

Our discussion of the psychological factors that affect financial decisions suggests that behavioural finance can play an important role in investing. Naturally, the debate on the efficiency of markets rages on and will continue to do so for many years. The contribution of behavioural finance is to identify particular psychological factors that can lead investors to make systematic mistakes, and those mistakes may contribute to predictable patterns in share prices. If that's the case, the mistakes of some investors may be the profit opportunities for others. See Table 9.1 for our advice on how to keep your own mistakes to a minimum. In the next section we will examine technical analysis, the art and science of examining past price movements to make future investment decisions.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

9.4 How can behavioural finance have any bearing on investor returns? Do supporters of behavioural finance believe in efficient markets? Explain.

9.5 Briefly explain how behavioural finance can affect each of the following:

a. The trading activity of investors
b. The tendency of value shares to outperform growth shares
c. The tendency of share prices to drift up (down) after unusually good (bad) earnings news

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 9.1 Using Behavioural Finance to Improve Investment Results

Studies have documented a number of behavioural factors that appear to influence investors' decisions and adversely affect their returns. By following some simple guidelines, you can avoid making mistakes and improve your portfolio's performance. A little common sense goes a long way in the financial markets!

- **Don't hesitate to sell a losing share.** If you buy a share at $20 and its price drops to $10, ask yourself whether you would buy that same share if you came into the market today with $10 in cash. If the answer is yes, then hang onto it. If not, sell the share and buy something else.
- **Don't chase performance.** The evidence suggests that there are no 'hot hands' in investment management. Don't buy last year's hottest managed fund if it doesn't make sense for you. Always keep your personal investment objectives and constraints in mind.
- **Be humble and open-minded.** Many investment professionals, some of whom are extremely well paid, are frequently wrong in their predictions. Admit your mistakes and don't be afraid to take corrective action. The fact is, reviewing your mistakes can be a very rewarding exercise—all investors make mistakes, but the smart ones learn from them. Winning in the market is often about not losing, and one way to avoid loss is to learn from your mistakes.
- **Review the performance of your investments on a periodic basis.** Remember the old saying, 'Out of sight, out of mind'. Don't be afraid to face the music and to make changes as your situation changes. Nothing runs on 'autopilot' forever—including investment portfolios.
- **Don't trade too much.** Investment returns are uncertain, but transaction costs are guaranteed. Considerable evidence indicates that investors who trade frequently perform poorly.

Technical Analysis

LG4 LG5 LG6

technical analysis the study of the various forces at work in the marketplace and their effect on share prices.

Analysing the various forces at work in the market is known as **technical analysis**. For some investors, it's another piece of information to use when deciding whether to buy, hold or sell a share. For others, it's the *only* input they use in their investment decisions. Still others regard both technical analysis and fundamental analysis as a waste of time.

Analysing market behaviour dates back to the 1800s, when there was no such thing as industry or company analysis. Detailed financial information about individual companies simply was not made available to shareholders, let alone the general public. About the only thing investors could study was the market itself. Some investors used detailed charts to monitor what large market operators were doing. These charts were intended to show when major buyers were moving into or out of particular shares and to provide information useful for profitable buy-and-sell decisions. The charts centred on share price movements. These movements were said to produce certain 'formations', indicating when the time was right to buy or sell a particular share. The same principle is still applied today: technical analysts argue that internal market factors, such as trading volume and price movements, often reveal the market's future direction long before it is evident in financial statistics.

Using Technical Analysis

Investors have a wide range of choices with respect to technical analysis. They can use the charts and complex ratios of the technical analysts. Or they can, more informally,

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

use technical analysis just to get a general sense of the market. In the latter case, market behaviour itself is not as important as the implications such behaviour can have for the price performance of a particular share. Thus, investors can use technical analysis in conjunction with fundamental analysis to determine when to add a particular share to one's portfolio. Some investors and professional money managers, in fact, look at the technical side of a share *before* doing any fundamental analysis. If they find the share to be technically sound, then they'll look at its fundamentals; if not, they'll look for another share. For these investors, the concerns of technical analysis are still the same: *Do the technical factors indicate that this might be a good share to buy*?

Most investors rely on published sources, such as those put out by brokerage companies—or now widely available on the Internet—to obtain technical insights. Such information provides investors with a convenient and low-cost way of staying abreast of the market. Certainly, trying to determine the right (or best) time to get into the market is a principal objective of technical analysis—and one of the major pastimes of many investors.

INVESTOR FACTS

THE DOW JONES INDEX—The Dow Jones Industrial Average (DJIA), also known as the Dow Jones, or simply the Dow, is a US sharemarket index created by *Wall Street Journal* editor and Dow Jones & Co. co-founder Charles Dow. The average is named after Dow and one of his business associates, Edward Jones. It is an index that shows how the shares of 30 large, publicly owned US companies have traded during a standard trading session. It is one of the most closely watched benchmark indices tracking targeted sharemarket activity. Although Dow compiled the index to gauge the performance of the industrial sector within the American economy, the index's performance continues to be influenced by not only corporate and economic reports, but also by domestic and foreign political events such as war and terrorism, as well as by natural disasters that could potentially lead to economic harm.

Measuring the Market

If assessing the market is a worthwhile endeavour, then we need some sort of tool or measure to do it. Charts are popular with many investors because they provide a visual summary of the behaviour of the market and the price movements of individual shares. (We'll examine charting in more detail later in this chapter.) As an alternative or supplement to *charting*, some investors prefer to study various *market statistics*. They might look at the market as a whole, or track certain technical conditions that exist within the market itself, such as the volume of trading, the amount of short selling or the buy/sell patterns of small investors (i.e. odd-lot transactions).

Let's now examine some of these approaches to technical analysis. Later, we'll look at some ratios and formulas that investors can use to measure—that is, quantify—various technical conditions in the market. One thing to keep in mind as you work your way through this material is that, whether the measures appear rational or not, many of them (like breadth of the market, or charting) involve a good deal of judgment and intuition. Thus, they rely heavily on the market expertise of the analysts.

The Big Picture

Technical analysis addresses those factors in the marketplace that can (or may) have an effect on the price movements of shares in general. The idea is to get a handle on the general condition (or 'tone') of the market, and to gain some insights into where the market may be headed over the next few months. One way to do that is to look at *the overall behaviour of the market*. Several approaches try to do just that, including (1) the Dow theory, (2) trading actions, and (3) the confidence index.

Dow theory
a technical approach based on the idea that the market's performance can be described by the long-term price trend in the DJIA, as confirmed by the Dow Transportation Average.

The Dow Theory The **Dow theory** is based on the idea that the market's performance can be described by the long-term price trend in the overall market. Named after Charles H. Dow, one of the founders of Dow Jones, this approach is supposed to signal the end of both bull and bear markets. The theory does not indicate *when* a reversal will occur; rather, it is strictly an after-the-fact verification of what has already happened. It concentrates on the long-term trend in market behaviour (known as the *primary trend*) and largely ignores day-to-day fluctuations or secondary movements.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Dow theory uses the Dow Jones industrial *and* transportation averages to assess the position of the market. Once a primary trend in the Dow Jones Industrial Average has been established, the market tends to move in that direction until the trend is cancelled out by *both* the industrial and transportation averages. Known as *confirmation*, this crucial part of the Dow theory occurs when secondary movements in the industrial average are confirmed by secondary movements in the transportation average. When confirmation occurs, the market has changed from bull to bear, or vice versa, and a new primary trend is established. Figure 9.1 captures the key elements of the Dow theory. Observe that in this case, the bull market comes to an end at the point of confirmation—when *both* the industrial and transportation averages are dropping.

The biggest drawback of the Dow theory is that it is an after-the-fact measure with *no* predictive power. Also, the investor really does not know at any given point whether an existing primary trend has a long way to go or is just about to end.

Trading Action This approach to technical analysis concentrates on minor trading characteristics in the market. Daily trading activity over long periods of time (sometimes as long as 50 years or more) is examined to determine whether certain characteristics occur with a high degree of frequency. Although the empirical results generated from these studies are in many cases due to little more than statistical aberrations, analysts nonetheless use them to form a series of trading rules. Here are a few examples:

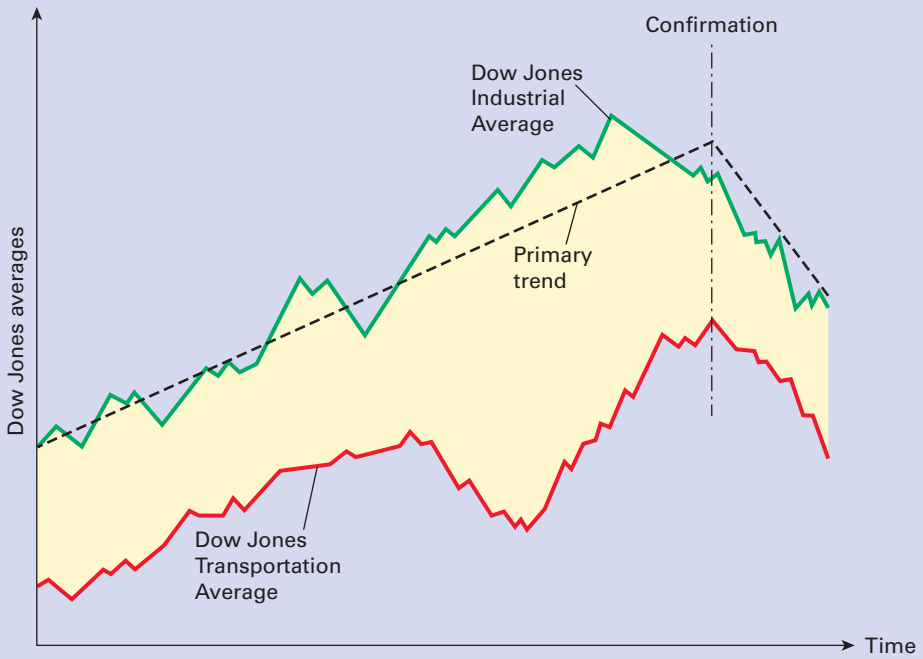
- If the year starts out strong (that is, if January is a good month for the market), the chances are that the whole year will be good.
- Markets tend to go up or down with the hemlines on women's dresses.

Clearly, the trading action approach is based on the simple assumption that the market moves in cycles and that these cycles have a tendency to repeat themselves. As a result, the contention seems to be that whatever has happened repeatedly in the past will probably reoccur in the future.

FIGURE 9.1

The Dow Theory in Operation

Secondary movements (the sharp, short fluctuations in the Dow Jones industrial and transportation lines) are largely unimportant to the Dow theory. What is of key importance, however, is the primary trend in the DJIA, which is seen to remain on the upswing until a reversal is confirmed by the transportation average.



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

AUSTRALIAN INVESTOR CONFIDENCE INDICES— Various research and financial institutions regularly measure the confidence in financial Australian markets. One example is the Melbourne Institute's Shareholder Confidence Index, which is a summary balance measure of shareholders' current and expected confidence in the Australian sharemarket. About 1500 Australian shareholders are surveyed via telephone to determine their assessment of sharemarket returns, volatility and their trading intentions. Another example is the Mercer Superannuation Sentiment Index, which aggregates individuals' perceptions of superannuation as a retirement-savings vehicle, superannuation fund investment performance, and concern about the impact of sharemarket volatility on superannuation. The index is constructed from the online responses of an annual sample of about 1000 working Australians.

Technical Conditions Within the Market

Another way to assess the market is to keep track of the variables that drive its behaviour—things like the volume of trading, short sales and odd-lot trading. Clearly, if these variables do, in fact, influence market prices, then it would be in an investor's best interest to keep tabs on them, at least informally. Let's now look at four of these market forces: (1) market volume, (2) breadth of the market, (3) short interest, and (4) odd-lot trading.

Market Volume Market volume is an obvious reflection of the amount of investor interest. Volume is a function of the supply of and demand for shares, and it indicates underlying market strengths and weaknesses. Investor eagerness to buy or sell is felt to be captured by market volume figures.

As a rule, the market is considered *strong* when volume goes up in a rising market or drops off during market declines. It is considered *weak* when volume rises during a decline or drops during rallies. For instance, the market would be considered strong if the S&P ASX 200 average went up by, say, 108 points while market volume was heavy.

The financial press regularly publishes volume data, so investors can easily watch this important technical indicator. An example of this and other vital market information is shown in Figure 9.2.

Breadth of the Market Each trading day, some shares go up in price and others go down. In market terminology, some shares advance and others decline. Breadth of the market deals with these advances and declines. The principle behind this indicator is that the number of advances and declines reflects the underlying sentiment of investors.

The idea is actually quite simple: so long as the number of shares that advance in price on a given day exceeds the number that decline, the market is considered strong. The extent of that strength depends on the spread between the number of advances and declines. For example, if the spread narrows (the number of declines starts to approach the number of advances), market strength is said to be deteriorating. Similarly, the market is considered weak when the number of declines repeatedly exceeds the number of advances. When the mood is optimistic, advances outnumber declines. Again, data on advances and declines are published daily in the financial press.

Short Interest When investors anticipate a market decline, they sometimes sell a share short. That is, they sell borrowed shares. The number of shares sold short in the market at any given point in time is known as the **short interest**. The more shares are sold short, the higher the short interest. Because all short sales must eventually be 'covered' (the borrowed shares must be returned), a short sale in effect ensures *future demand for the share*. Thus, the market is viewed optimistically when the level of short interest becomes relatively high by historical standards. The logic is that as shares are bought back to cover outstanding short sales, the additional demand will push share prices up.

short interest
the number of shares sold short in the market at any given time; a technical indicator believed to indicate future market demand.

Keeping track of the level of short interest can indicate future market demand, but it can also reveal *present* market optimism or pessimism. Short selling is usually done by knowledgeable investors, and a significant build-up or decline in the level of short interest is thought to reveal the sentiment of sophisticated investors about the current state of the market or a company. For example, a significant shift upwards in short

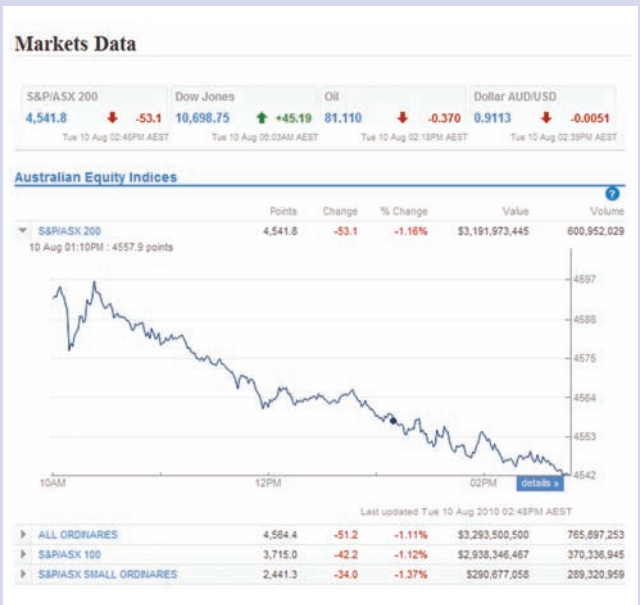
Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 9.2

Some Market Statistics

Individual investors can obtain all sorts of technical information at little or no cost from brokerage houses, the popular financial media or the Internet. Here, for example, is a sample of the type of information available daily from the *Australian Financial Review*. Note that a variety of information about market volume, advancing and declining shares, and dividend payments is available from this one source.

(*Source: Australian Financial Review*, August 2010, <http://tools.afr.com/markets-data>. Courtesy of the *Australian Financial Review*.)



interest is believed to indicate pessimism concerning the *current* state of the market, even though it may signal optimism with regard to *future* levels of demand.

Odd-Lot Trading A rather cynical saying on Wall Street suggests that the best thing to do is just the opposite of whatever the small investor is doing. The reasoning behind this is that as a group, small investors are notoriously wrong in their timing of investment decisions: the investing public usually does not come into the market in force until after a bull market has pretty much run its course, and it does not get out until late in a bear market. Although its validity is debatable, this is the premise behind a widely followed technical indicator and is the basis for the **theory of contrary opinion**. This theory uses the amount and type of odd-lot trading as an indicator of the current state of the market and pending changes.

theory of contrary opinion
a technical indicator that uses the amount and type of odd-lot trading as an indicator of the current state of the market and pending changes.

Because many individual investors deal in transactions of less than 100 shares, their combined sentiments are supposedly captured in odd-lot figures. The idea is to see what odd-lot investors 'on balance' are doing. So long as there is little or no difference

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

SHORT-SELLING AND THE GFC—The global financial crisis led to a short-term ban on all short-selling in Australia by ASIC in September 2008. In November 2008, the ban on short-selling of non-financial securities was lifted, followed by a lifting of the ban on all covered positions in May 2009. A key aspect of this regulation is the disclosure and reporting framework. Brokers are now obliged to ask a client whether a sale is long or short, and clients are obliged to inform their broker if a sale is short. Trading participants report all short sales to the ASX each day, including exempt covered short sales in financial securities. The reporting to the ASX is coupled with reporting to the market, by security, the total volume of short sales executed on the previous trading day.

in the spread between the volume of odd-lot purchases and sales, the theory of contrary opinion holds that the market will probably continue pretty much along its current line (either up or down). A dramatic change in the balance of odd-lot purchases and sales may be a signal that a bull or bear market is about to end. For example, if the amount of odd-lot purchases starts to exceed odd-lot sales by an ever-widening margin, speculation on the part of small investors may be starting to get out of control—an ominous signal that the final stages of a bull market may be at hand.

Trading Rules and Measures

Market technicians—analysts who believe that it is chiefly (or solely) supply and demand that drive share prices—use a variety of mathematical equations and measures to assess the underlying condition of the market. These analysts often use computers to produce the measures, plotting them on a daily basis. They then use those measures as indicators of when to get into or out of the market or a particular share. In essence, *they develop trading rules based on these market measures*. Technical analysts almost always use several of these market measures, rather than just one (or two), because one measure rarely works the same way for all shares. Moreover, they generally look for *confirmation* of one measure by *another*. In other words, market analysts like to see three or four of these ratios and measures all pointing in the same direction.

There are no 'magic' numbers associated with these indicators. Some analysts may consider 20% and 80% to be 'critical' levels for an indicator; others may use 40% and 60% for the same indicator. Market technicians often determine the critical levels by using a process known as *backtesting*, which involves using historical price data to generate buy and sell signals. That is, they compute the profits generated from a series of trading rules and then try to find the indicators that generate the greatest amount of profits. Those measures then become the buy and sell signals for the various market indicators they employ.

market technicians
analysts who believe it is chiefly (or solely) supply and demand that drive share prices.

Although literally dozens of these market measures and trading rules exist, we'll confine our discussion here to some of the more widely used technical indicators: (1) advance/decline lines, (2) new highs and lows, (3) the arms index, (4) the managed fund cash ratio, (5) on-balance volume, and (6) the *relative strength index (RSI)*.

If the graph is rising, the advancing issues are dominating the declining issues, and the market is considered strong. When declining issues start to dominate, the graph will turn down as the market begins to soften. Technicians use the advance/decline (A/D) line as a signal for when to buy or sell shares.

New Highs–New Lows This measure is similar to the advance/decline line, but looks at price movements over a longer period of time. A share is defined as reaching a 'new high' if its current price is at the highest level it has been over the past year (sometimes referred to as the '52-week high'). Conversely, a share makes a 'new low' if its current price is at the lowest level it has been over the past year.

The *new highs–new lows (NH–NL) indicator* is computed as the number of shares reaching new 52-week highs minus the number reaching new lows. Thus, you end up with a *net number*, which can be either positive (when new highs dominate) or negative (when new lows exceed new highs), just like with the advance/decline line. To smooth out the daily fluctuations, *the net number is often added to (or subtracted from) a 10-day moving average, and then plotted on a graph*.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

As you might have guessed, a graph that's increasing over time indicates a strong market, where new highs are dominating. A declining graph indicates a weak market, where new lows are more common than new highs. Technicians following a momentum-based strategy will buy shares when new highs dominate and sell them when there are more new lows than new highs. Alternatively, they might use the indicator to rotate money into shares when the market looks strong and to rotate out of shares and into cash or bonds when the market looks weak.

The Arms Index This indicator, also known as the TRIN, for *trading index*, builds on the advance/decline line by considering *the volume* in advancing and declining shares in addition to *the number of shares* rising or falling in price. The formula is

$$TRIN = \frac{\text{Number of up shares}}{\text{Number of down shares}} \div \frac{\text{Volume in up shares}}{\text{Volume in down shares}}$$

For example, suppose we are analysing the S&P ASX 200. Assume that on a given day, 300 of these shares rose in price and 200 fell in price. Also assume that the total trading volume in the rising ('up') shares was 400 million, and the total trading volume in the falling ('down') shares was 800 million. The value of the TRIN for the day would be

$$TRIN = \frac{300}{200} \div \frac{400 \text{ million}}{800 \text{ million}} = \underline{\underline{3.0}}$$

Alternatively, suppose the volume in up shares was 700 million, and the volume in down shares was 300 million. The value of the TRIN then would be

$$TRIN = \frac{300}{200} \div \frac{700 \text{ million}}{300 \text{ million}} = \underline{\underline{0.64}}$$

Higher TRIN values are interpreted as being bad for the market, because even though more shares rose than fell, the trading volume in the falling shares was much greater. The underlying idea is that a strong market is characterised by more shares rising in price than falling, *along with greater volume in the rising shares than in the falling ones*, as in the second example.

Managed Fund Cash Ratio This indicator looks at the cash position of managed funds as an indicator of future market performance. The *managed fund cash ratio* measures the percentage of managed fund assets that are held in cash. It is computed as follows:

$$\text{Managed fund cash position} \div \text{Total assets under management}$$

The assumption is that the higher the managed fund cash ratio, the stronger the market. Indeed, the ratio is considered very bullish when it moves to abnormally high levels (i.e. when managed fund cash exceeds 10–12% of total assets). It is seen as bearish when the ratio drops to very low levels (e.g. less than 5% of assets). The logic goes as follows: when fund managers hold a lot of cash (when the ratio is high), that's good news for the market, because they will eventually have to invest that cash, buying shares and causing prices to rise. If fund managers hold very little cash, investors might be concerned for two reasons. First, there is less demand for shares if most of the cash is already invested. Second, if the market takes a downturn, investors might want to withdraw their money. Fund managers will then have to sell some of their shares to accommodate these redemptions, putting additional downward pressure on prices.

On-Balance Volume Technical analysts usually consider *share prices* to be the key measure of market activity. However, they also consider *trading volume* to be a

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

secondary indicator. *On-balance volume (OBV)* is a momentum indicator that relates volume to price change. It uses trading volume in addition to price and *tracks trading volume as a running total*. In this way, OBV indicates whether volume is flowing into or out of a security. When the security closes higher than its previous close, all the day's volume is considered 'up-volume', all of which is *added to the running total*. In contrast, when a share closes lower, all the day's volume is considered 'down-volume', which is then *subtracted from the running total*.

The OBV indicator is used to *confirm* price trends. According to this measure, you want to see a lot of volume when a share's price is rising, because this would suggest that the share will go even higher. On the other hand, if prices are rising but OBV is falling, technical analysts would describe the situation as a *divergence* and interpret it as a sign of possible weakness.

When analysing OBV, it is the direction or trend that is important, not the actual value. To begin the computation of OBV, you can start with an arbitrary number, such as 50 000. Suppose you are calculating the OBV for a share that closed yesterday at a price of $50 per share, and you start with an OBV value of 50 000. Assume that the share trades 80 000 shares today and closes at $49. Because the share declined in price, we would subtract the full 80 000 shares from the previous balance (our starting point of 50 000); now the OBV is 50 000 – 80 000 = –30 000. (Note that the OBV is simply the *trading volume running total*.) If the share trades 120 000 on the following day and closes up at $52 per share, we would then add all of those 120 000 shares to the previous day's OBV: –30 000 + 120 000 = +90 000. This process would continue day after day. The normal procedure is to plot these daily OBVs on a graph. As long as the graph is moving up, it's bullish; when the graph starts moving down, it's bearish.

Relative Strength One of the most widely used technical indicators is the *relative strength index (RSI)*, an index measuring a security's strength of advances and declines over time. The RSI indicates a security's momentum and gives the best results when used for short trading periods. It also helps identify market extremes, signalling that a security is approaching its price top or bottom and may soon reverse trend. The RSI is the ratio of average price change on 'up days' to the average price change on 'down days' during the same period. The index formula is

$$RSI = 100 - \left[100 \div \left(1 + \frac{\text{Average price change on up days}}{\text{Average price change on down days}}\right)\right]$$

The RSI can cover various periods of time (days, weeks or months). The most common RSIs are nine-, 14- and 25-day periods.

The RSI ranges between 0 and 100, with most RSIs falling between 30 and 70. Generally, values above 70 or 80 indicate an *overbought* condition (more and stronger buying than fundamentals would justify). RSI values below 30 indicate a possible *oversold* condition (more selling than fundamentals may indicate). When the RSI crosses these points, it signals a possible trend reversal. The wider 80–20 range is often used with the nine-day RSI, which tends to be more volatile than longer period RSIs. In bull markets, 80 may be a better upper indicator than 70; in bear markets, 20 is a more accurate lower level. Different sectors and industries may have varying RSI threshold levels.

To use the RSI in their own trading, investors set buy and sell ranges—such as selling when the RSI crosses above 70 and buying when it moves below 30. Another strategy is to compare RSIs with share charts. Most of the time both move in the same direction, but a divergence between RSI and a price chart can be a strong predictor of a changing trend.

Like many other technical indicators, the RSI should not be used alone. It works best in combination with other tools such as charting, moving averages and trend lines.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Charting

charting
the activity of charting price behaviour and other market information and then using the patterns these charts form to make investment decisions.

Charting is perhaps the best-known activity of the technical analyst. Indeed, technical analysts use various types of charts to plot the behaviour of everything from the S&P ASX 200 average and price movements of individual shares to moving averages (see below) and advance/decline lines. In fact, as noted above, just about every type of technical indicator is charted in one form or another. Figure 9.3 shows a typical share chart. In this case, the chart plots the price behaviour of Qantas Airways Ltd, along with a variety of supplementary technical information about the share.

Charts are popular because they provide a visual summary of activity over time. Perhaps more important (in the eyes of technicians, at least), they contain valuable

FIGURE 9.3

A Share Chart

This chart for Qantas contains information about the daily share price behaviour of the share, its moving average, its trading volume and the level of the ASX 200 Index.

QANTAS AIRWAYS LIMITED price history chart

ASX excludes all liability arising out of any inaccuracies in this chart, except where liability is made non-excludable by legislation. Chart values may be adjusted for changes in a company's capital structure or to link historical values that represent the company's primary equity security.

(*Source:* Australian Securities Exchange, <www.asx.com.au/asx/research/companyInfo.do?by=asxCode&asxCode=QAN>, accessed 10 August 2010. © ASX Limited ABN 98 008 624 691 (ASX) 2010. All rights reserved. This material is reproduced with the permission of ASX. This material should not be reproduced, stored in a retrieval system or transmitted in any form whether in whole or in part without the prior written permission of ASX. *Note:* Visit this website's 'Explanation of ASX chart terms' page for expanded definitions.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

information about developing trends and the future behaviour of the market and/or individual shares. Chartists believe that price patterns evolve into *chart formations* that provide signals about the future course of the market or a share. We will now briefly review the popular types of charts, chart formations and the use of moving averages.

bar chart
the simplest kind of chart, on which share price is plotted on the vertical axis and time on the horizontal axis; share prices are recorded as vertical bars showing high, low and closing prices.

Bar Charts The simplest and probably most widely used type of chart is the **bar chart**. It shows market or share prices on the vertical axis and time on the horizontal axis. This type of chart derives its name from the fact that prices are recorded as vertical bars that depict high, low and closing prices. A typical bar chart is shown in Figure 9.4. Note that on 31 December this particular share had a high price of 29, a low of 27, and it closed at 27.50. Because these charts contain a time element, technicians frequently plot a variety of other pertinent information on them. For example, volume is often put at the base of bar charts (see the Qantas chart in Figure 9.3).

point-and-figure charts
charts used to keep track of emerging price patterns by plotting significant price changes with Xs and Os but with no time dimension used.

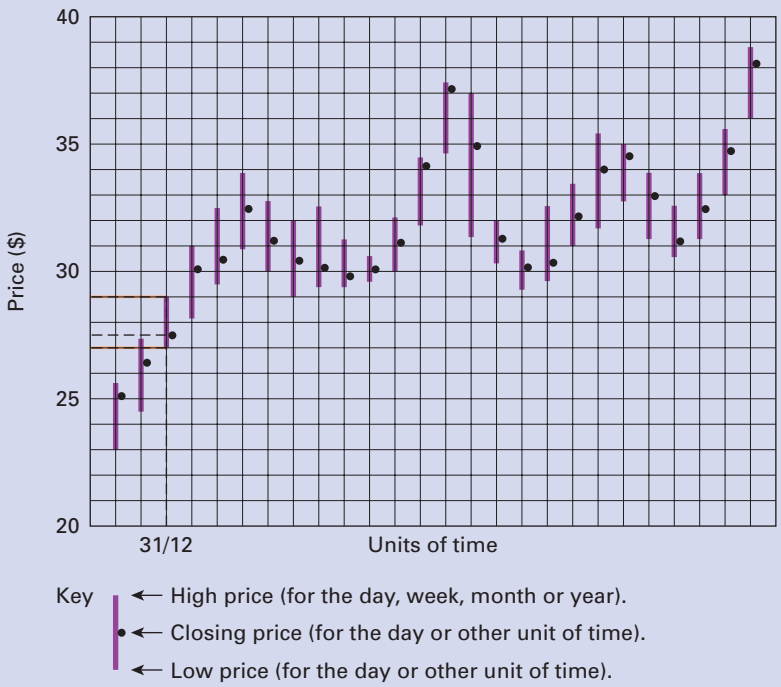
Point-and-Figure Charts **Point-and-figure charts** are used strictly to keep track of emerging price patterns. Because there is no time dimension on them, they are not used for plotting technical measures. (Note that while there is no indication of time on the horizontal axis of point-and-figure charts, technical analysts/chartists will often keep track of significant dates or points in time by placing letters or numbers directly on the body of the chart itself.)

In addition to their treatment of time, point-and-figure charts are unique in two other ways. First, these charts record only *significant* price changes. That is, prices have to move by a certain minimum amount—usually at least a point or two—before a new price level is recognised. Second, price *reversals* show up only after a predetermined change in direction occurs. Normally, only closing prices are charted, although some point-and-figure charts use all price changes during the day. An X denotes an increase in price; an O denotes a decrease.

FIGURE 9.4

A Bar Chart

Bar charts are widely used to track share prices, market averages and numerous other technical measures.



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Figure 9.5 shows a common point-and-figure chart. In this case, the chart employs a two-point box; that is, the share must move by a minimum of two points before any changes are recorded. The chart can cover a span of one year or less if the share is highly active, or it can cover a number of years if the share is not very active. As a rule, low-priced shares are charted with one-point boxes, moderately priced shares with increments of two to three points, and high-priced securities with three- to five-point boxes.

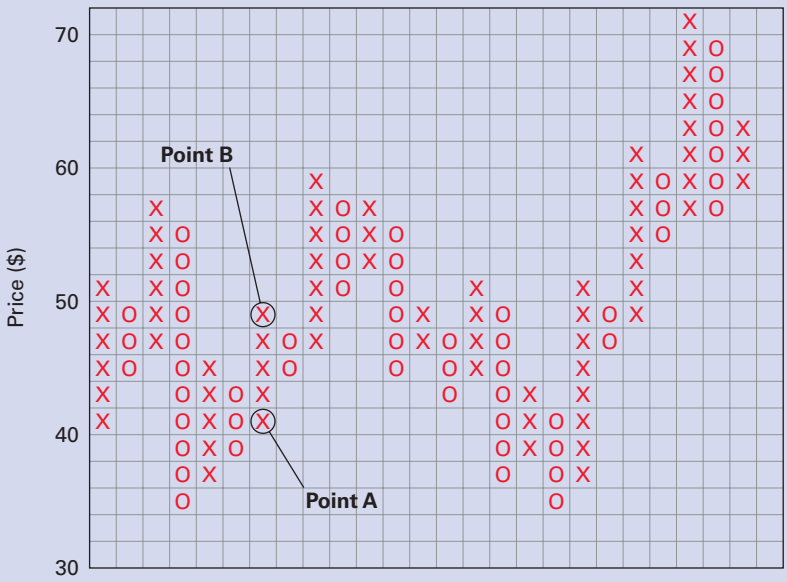
Here is how point-and-figure charts work: suppose we are at point A on the chart in Figure 9.5. The share has been hovering around this $40–$41 mark for some time. Assume, however, that it just closed at $42.25. Now, because the minimum two-point movement has been met, the chartist would place an X in the box immediately *above* point A. He or she would remain with this new box as long as the price moved (up or down) within the two-point range of 42–44. Although the chartist follows *daily* prices, he or she would make a new entry on the chart only after the price has changed by a certain minimum amount and moved into a new two-point box. We see that from point A, the price generally moved up over time to nearly $50 a share. At that point (point B on the chart), things began to change as a reversal set in. The price of the share began to drift downward and in time moved out of the $48–$50 box. This reversal prompts the chartist to change columns and symbols, by moving one column to the right and recording the new price level with an O in the $46–$48 box. The chartist will continue to use Os as long as the share continues to close on a generally lower note.

Chart Formations A chart by itself tells you little more than where the market or a share has been. But to chartists, those price patterns yield formations that tell them what to expect in the future. Chartists believe that history repeats itself, so they study the historical reactions of shares (or the market) to various formations, and they devise trading rules based on these observations. It makes no difference to chartists whether they are following the market or an individual share. *It is the formation that matters*, not the issue being plotted. If you know how to interpret charts (which is no easy task),

FIGURE 9.5

A Point-and-Figure Chart

Point-and-figure charts are unusual because they have no time dimension. Rather, a column of Xs is used to reflect a general upward drift in prices, and a column of Os is used when prices are drifting downward.



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

you can see formations building and recognise buy and sell signals. These chart formations are often given exotic names, such as *head and shoulders*, *falling wedge*, *scallop and saucer*, *ascending triangle* and *island reversal*, to name just a few.

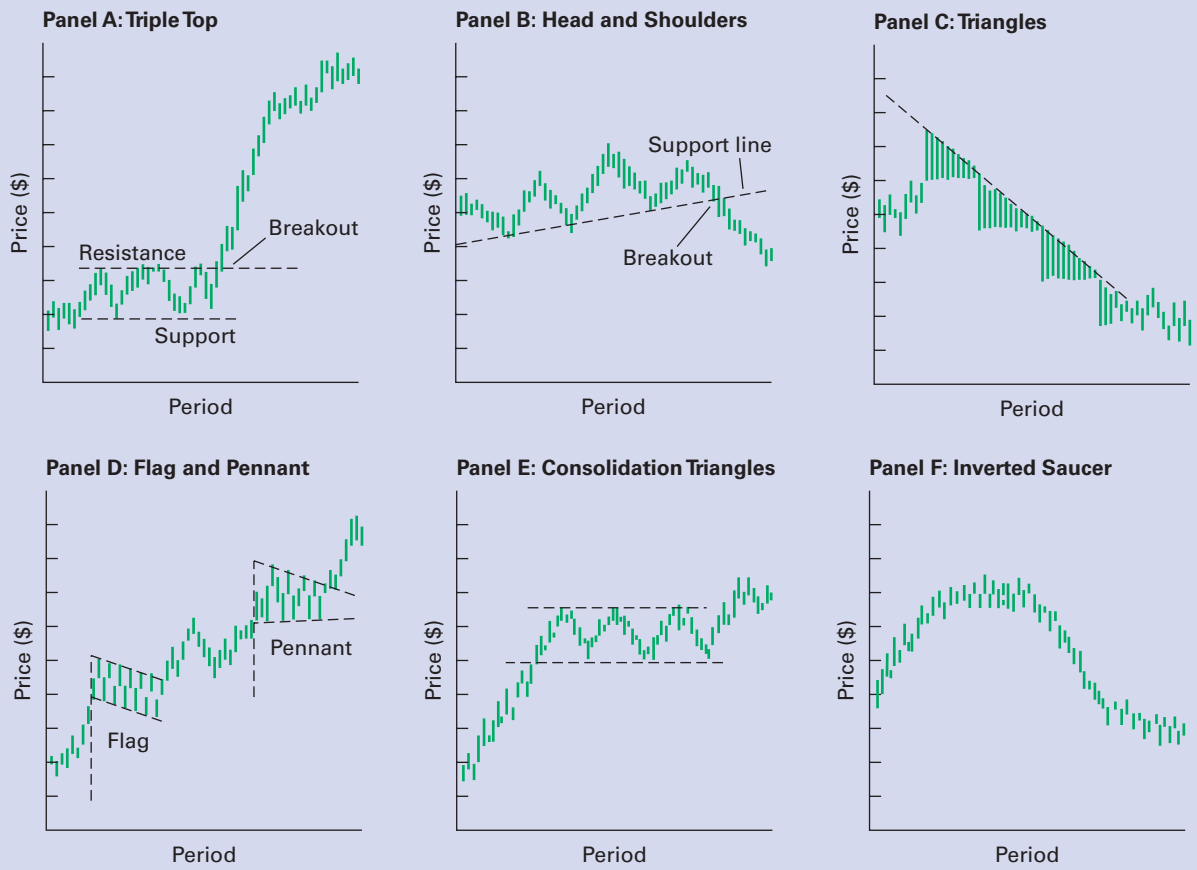
Figure 9.6 shows six of these formations. The patterns form 'support levels' and 'resistance lines' that, when combined with the basic formations, yield buy and sell signals. Panel A is an example of a *buy* signal that occurs when prices break out above a resistance line in a particular pattern. In contrast, when prices break out below a support level, as they do at the end of the formation in panel B, a *sell* signal is said to occur. Supposedly, a sell signal means everything is in place for a major drop in the market (or in the price of a share). A buy signal indicates that the opposite is about to occur.

Unfortunately, one of the major problems with charting is that the formations rarely appear as neatly and cleanly as those in Figure 9.6. Rather, identifying and interpreting them often demands considerable imagination.

Moving Averages One problem with daily price charts is that they may contain a lot of often meaningless short-term price swings that mask the overall trend in prices. As a result, technical analysts will often use moving averages not only to eliminate those

FIGURE 9.6 Some Popular Chart Formations

To chartists, each of these formations has meaning about the future course of events.



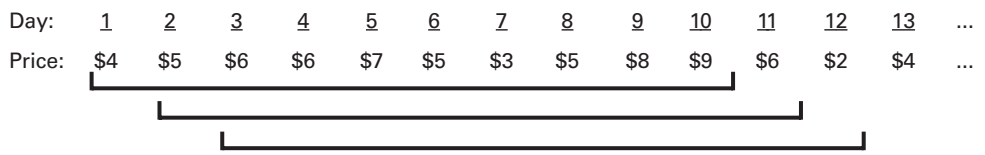
Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

moving average (MA)
a mathematical procedure that computes and records the average values of a series of prices, or other data, over time; results in a stream of average values that will act to smooth out a series of data.

minor blips, but also to highlight underlying trends. A **moving average** (**MA**) is a mathematical procedure that records the average value of a series of prices, or other data, over time. Because they incorporate a stream of these average values, MAs will smooth out a data series and make it easier to spot trends. The moving average is one of the oldest and most popular technical indicators. It can, in fact, be used not only with share prices, but also with market indices and even other technical measures.

Moving averages are computed over periods ranging from 10 to 200 days—meaning that from 10 to 200 data points are used in each calculation. For example, a series of 15 data points is used in a 15-day moving average. The length of the time period has a bearing on how the moving average will behave. Shorter periods (10 to 30 days) are more sensitive and tend to more closely track actual daily behaviour. Longer periods (say, 100 to 200 days) are smoother and do a better job of picking up the major trends. Several types of moving averages exist, with the most common (and the one we'll use here) being the *simple average*, which gives equal weight to each observation. In contrast, there are other procedures that give more weight to the most recent data points (e.g. the 'exponential' and 'weighted' averages) or apply more weight to the middle of the time period (e.g. 'triangular' averages).

Using closing share prices as the basis of discussion, we can calculate the simple moving average by adding up the closing prices over a given time period (e.g. 10 days), and then dividing this total by the length of the time period. Thus, *the simple moving average is nothing more than the arithmetic mean*. To illustrate, consider the following stream of closing share prices:



Using a 10-day moving average, we add up the closing prices for days 1 through 10 ($4 + $5 + … + $8 + $9 = $58) and then divide this total by 10 ($58 ÷ 10 = $5.8). Thus, the average closing price for this 10-day period was $5.80. The next day, the process is repeated once again for days 2 through 11; that turns out to be $60 ÷ 10 = $6.00. This procedure is repeated each day, so that over time we have a series of these individual averages that, when linked together, form a *moving-average line*. This line is then plotted on a chart, either by itself or along with other market information.

Figure 9.3 shows a 20-day moving average plotted against the daily closing prices for Qantas Airways Ltd. In contrast to the actual closing prices, the moving average provides a much smoother line, without all the short-term fluctuations; it clearly reveals the general trend in prices for this share.

Technicians will often use charts like the one in Figure 9.3 to help them make buy and sell decisions about a share. Specifically, if the security's price starts moving above the moving average, they read that situation as a good time to buy, because prices should be drifting up (see the buy signals on the chart). In contrast, a sell signal occurs when the security's price moves below the moving average line (see the sell signals). Of course, investors would not necessarily buy or sell every time a share moves above or below its moving average, and especially not when shares are essentially moving sideways, as that could lead to little more than big transactions costs. Indeed, such a strategy is not intended to get you in at the exact bottom or out at the exact top. Instead, it's meant to indicate potential buy/sell opportunities in the early stages of a long-term change in the share price.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

9.6 What is the purpose of *technical analysis*? Explain how and why it is used by technicians; note how it can be helpful in timing investment decisions.

9.7 Can the market really have a measurable effect on the price behaviour of individual securities? Explain.

9.8 Briefly describe each of the following and explain how it is used in technical analysis:

a. *Breadth of the market*
b. *Short interest*
c. *Odd-lot trading*

9.9 Briefly describe each of the following and note how it is computed and how it is used by technicians:

a. *Advance/decline lines*
b. *Arms index*
c. *On-balance volume*
d. *Relative strength index*
e. *Moving averages*

9.10 What is a share chart? What kind of information can be put on charts, and what is the purpose of charting?

a. What is the difference between a bar chart and a point-and-figure chart?
b. What are chart formations, and why are they important?

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Describe the characteristics of an efficient market, explain what market anomalies are, and note some of the challenges that investors face when markets are efficient. An efficient market is one in which prices fully reflect all available information and price movements are nearly random. If markets are efficient, then investors should not expect to earn above-average returns consistently by using either technical or fundamental analysis.

LG 2 List four 'decision traps' that may lead investors to make systematic errors in their investment decisions. Behavioural finance asserts that investors are subject to a variety of decision traps which include overconfidence, loss aversion, representativeness, narrow framing and belief perseverance. If investors do indeed make systematic errors in their investment decisions, then those errors may influence prices in financial markets.

Key Terms

behavioural finance, *p. 289*
efficient market, *p. 284*
efficient markets hypothesis (EMH), *p. 284*
market anomalies, *p. 287*
random walk hypothesis, *p. 284*
semi-strong form (EMH), *p. 285*
strong form (EMH), *p. 286*
weak form (EMH), *p. 285*

loss aversion, *p. 291*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 3 **Explain how behavioural finance links market anomalies to investors' cognitive biases.** A market anomaly represents a pattern in share prices that would appear to present investors with an opportunity to earn above-average returns without taking above-average risk. Behavioural finance suggests that some market anomalies exist because investors make systematic errors, such as undervaluing shares that have performed poorly in recent years.	
LG 4 **Discuss the purpose of technical analysis and explain why the performance of the market is important to share valuation.** Technical analysis deals with the behaviour of the sharemarket itself and the various economic forces at work in the marketplace. Technical analysis is used to assess the condition of the market and to determine whether it's a good time to be buying or selling shares. Some investors try to keep tabs on the markets in an informal way. Others use complex mathematical formulas and rules to guide them in their buy and sell decisions.	technical analysis, *p. 295*
LG 5 **Describe some of the approaches to technical analysis, including, among others, the Dow theory, moving averages, charting and various indicators of the technical condition of the market.** Market analysts look at those factors in the marketplace that can affect the price behaviour of shares in general. This analysis can be done by assessing the overall condition of the market (as the Dow theory does), by informally or formally studying various internal market statistics (e.g. short interest or advance/decline lines), or by charting various aspects of the market (including the use of moving averages).	Dow theory, *p. 296* market technician, *p. 300* short interest, *p. 298* theory of contrary opinion, *p. 299*
LG 6 **Compute and use technical trading rules for individual shares and the market as a whole.** Technical analysts use a number of mathematical equations and measures to gauge the direction of the market, including advance/decline lines, new highs and lows, the trading index, the mutual fund cash ratio, on-balance volume and the relative strength index. They test different indicators using historical price data to find those that generate profitable trading strategies, which then are developed into trading rules used to guide buy and sell decisions.	bar chart, *p. 304* charting, *p. 303* moving average (MA), *p. 307* point-and-figure charts, *p. 304*

Discussion Questions

LG 1

Q9.1 Much has been written about the concept of an *efficient market*. It's probably safe to say that some of your classmates believe the markets are efficient and others believe they are not. Have a debate to see whether you can resolve this issue (at least among yourselves). Pick a side, either for or against efficient markets, and then develop your 'ammunition'. Be prepared to discuss the following three aspects.

a. What is an efficient market? Do such markets really exist?

b. Are share prices always (or nearly always) correctly set in the market? If so, does that mean little opportunity exists to find undervalued shares?

c. Can you cite any reasons to use fundamental and/or technical analysis in your share selection process? If not, how would you go about selecting shares?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG2 LG3 **Q9.2** Briefly define each of the following terms and describe how it can affect investors' decisions:

a. Loss aversion
b. Representativeness
c. Narrow framing
d. Overconfidence
e. Biased self-attribution

LG2 LG3 **Q9.3** Describe how representativeness may lead to biases in share valuation.

LG4 **Q9.4** Briefly describe how technical analysis is used as part of the share valuation process. What role does it play in an investor's decision to buy or sell a share?

LG4 LG5 **Q9.5** Describe each of the following approaches to technical analysis and note how it would be used by investors.

a. Arms index
b. Trading action
c. Odd-lot trading
d. Charting
e. Moving averages
f. On-balance volume

Which of these approaches is likely to involve some type of mathematical equation or ratio?

LG5 **Q9.6** Briefly define each of the following and note the conditions that would suggest the market is technically strong.

a. Breadth of the market
b. Short interest
c. Relative strength index (RSI)
d. Theory of contrary opinion
e. Head and shoulders

Problems

All problems are available on **www.pearson.com.au/myfinancelab**

LG5 LG6 **P9.1** Compute the arms index for the S&P ASX 200 over the following three days:

Day	Number of Shares **Rising** in Price	Number of Shares **Falling** in Price	Volume for Shares **Rising** in Price	Volume for Shares **Falling** in Price
1	350	150	850 million shares	420 million shares
2	275	225	450 million shares	725 million shares
3	260	240	850 million shares	420 million shares

Which of the three days would be considered the most bullish? Explain why.

LG5 LG6 **P9.2** Compute the level of on-balance volume (OBV) for the following three-day period for a share, if the beginning level of OBV is 50 000 and the share closed yesterday at $25.

Day	Closing Price	Trading Volume
1	$27	70 000 shares
2	$26	45 000 shares
3	$29	120 000 shares

Does the movement in OBV appear to confirm the rising trend in prices? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG5 LG6

P9.3 Below are figures representing the number of shares making new highs and new lows for each month over a six-month period:

Month	New Highs	New Lows
July	117	22
August	95	34
September	84	41
October	64	79
November	53	98
December	19	101

Would a technical analyst consider the trend to be bullish or bearish over this period? Explain.

LG5 LG6

P9.4 You are given the following information:

Day	New Highs	New Lows
1 (yesterday)	117	22
2	95	34
3	84	41
4	64	79
5	53	98
6	19	101
7	19	105
8	18	110
9	19	90
10	22	88

a. Calculate the 10-day moving average NH–NL indicator.
b. If there are 120 new highs and 20 new lows today, what is the new 10-day moving average NH–NL indicator?

LG5 LG6

P9.5 You have collected the following NH–NL indicator data:

Day	NH-NL Indicator
1 (yesterday)	100
2	95
3	61
4	43
5	–15
6	–45
7	–82
8	–86
9	–92
10	–71

If you are a technician following a momentum-based strategy, are you buying or selling today?

LG5 LG6

P9.6 You are presented with the following data:

Week	Managed Fund Cash Position	Managed Fund Total Assets
Most recent	$281 478 000	$2 345 650 000
2	258 500 000	2 350 000 000
3	234 800 000	2 348 000 000
4	211 950 000	2 355 000 000
5	188 480 000	2 356 000 000

Calculate the managed fund cash ratio for each week. Based on the result, are you bullish or bearish?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG5 LG6 **P9.7** You find the closing prices for a share you own. You want to use a 10-day moving average to monitor the share. Calculate the 10-day moving average for days 11 through 20. Based on the data in the table below, are there any signals you should act on? Explain.

Day	Closing Price	Day	Closing Price
1	$25.25	11	$30.00
2	26.00	12	30.00
3	27.00	13	31.00
4	28.00	14	31.50
5	27.00	15	31.00
6	28.00	16	32.00
7	27.50	17	29.00
8	29.00	18	29.00
9	27.00	19	28.00
10	28.00	20	27.00

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 9.1 BRETT RUNS SOME TECHNICAL MEASURES ON A SHARE

LG4 LG5 Brett Daly is an active share trader and an avid market technician. He got into technical analysis about 10 years ago and, although he now uses the Internet for much of his analytical work, he still enjoys running some of the numbers and doing some of the charting himself. Brett likes to describe himself as a 'serious share trader' who relies on technical analysis for some—but certainly not all—of the information he uses to make an investment decision; unlike some market technicians, he does not totally ignore a share's fundamentals. Right now he's got his eye on a share that he's been tracking for the past three or four months.

The share is Nautilus Navigation, a mid-sized high-tech company that's been around for a number of years and has a demonstrated ability to generate profits year-in and year-out. The problem is that the earnings are a bit erratic, tending to bounce up and down from year to year, which causes the price of the share to be a bit erratic as well. And that's exactly why Brett likes the share—as a trader, the volatile prices enable him to move in and out of the share over relatively short (three- to six-month) periods.

Brett has already determined that the share has 'decent' fundamentals, so he does not worry about its basic soundness. Hence, he can concentrate on the technical side of the share. In particular, he wants to run some technical measures on the market price behaviour of the security. He's obtained recent closing prices on the share, which are shown in the table below.

Recent Price Behaviour: Nautilus Navigation

14 (15/8/10)	18.55	20	17.50
14.25	17.50	20.21	18.55
14.79	17.50	20.25	19.80
15.50	17.25	20.16	19.50
16	17	20	19.25
16	16.75	20.25	20
16.50	16.50	20.50	20.90
17	16.55	20.80	21
17.25	16.15	20	21.75
17.20	16.80	20	22.50
18	17.15	20.25	23.25
18 (30/9/10)	17.22	20	24
18.55	17.31 (31/10/10)	19.45	24.25
18.65	17.77	19.20	24.15
18.80	18.23	18.25 (30/11/10)	24.75
19	19.22	17.50	25
19.10	20.51	16.75	25.50
18.92	20.15	17	25.55 (31/12/10)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Nautilus shares are actively traded on the ASX and enjoy considerable market interest.

QUESTIONS

1. Use the closing share prices in the table above to compute the share's relative strength index (RSI) for (1) the 20-day period from 30/09/10 to 31/10/10; and (2) the 22-day period from 30/11/10 to 31/12/10. (*Hint:* Use a simple (unweighted) average to compute the numerator (average price change on up days) and the denominator (average price change on down days) of the RSI formula shown on page 302.)
   a. Contrast the two RSI measures you computed. Is the index getting bigger or smaller, and is that good or bad?
   b. Is the latest RSI measure giving a buy or a sell signal? Explain.
2. Based on the above closing share prices, prepare a moving-average line covering the period shown in the table; use a 10-day time frame to calculate the individual average values.
   a. Plot the daily closing prices for Nautilus from 15/8/10 through 31/12/10 on a graph/chart.
   b. On the same graph/chart, plot a moving-average line using the individual average values computed earlier. Identify any buy or sell signals.
   c. As of 31/12/10, was the moving-average line giving a buy, hold or sell signal? Explain. How does that result compare to what you found with the RSI in part **1**? Explain.
3. Prepare a point-and-figure chart of the closing prices for Nautilus Navigation. (Use a one-point system, in which each box is worth $1.) Discuss how technical analysts use this and similar charts.
4. Based on the technical measures and charts you've prepared, what course of action would you recommend that Brett take with regard to Nautilus Navigation? Explain.

Case Problem 9.2 DEB TAKES MEASURE OF THE MARKET

LG 4 LG 5 Several months ago, Deb Forrester received a substantial sum of money from the estate of her late aunt. Deb initially placed the money in a savings account because she was not sure what to do with it. Since then, however, she has taken a course in investments at the local university. The textbook for the course was, in fact, this one, and the class just completed Chapter 9. Excited about what she has learned in class, Deb has decided that she definitely wants to invest in shares. But before she does, she wants to use her new-found knowledge in technical analysis to determine whether now would be a good time to enter the market.

Deb has decided to use all four of the following measures to help her determine if now is indeed a good time to start putting money into the sharemarket:

- Dow theory
- New highs–new lows (NH–NL) indicator (*assume the current 10-day moving average is zero and the last 10 periods were each zero*)
- Arms index
- Managed fund cash ratio

Deb goes to the Internet and, after considerable effort, is able to put together the table of data as seen at the top of page 314.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

	Period 1	Period 2	Period 3	Period 4	Period 5
Dow Jones Industrial Average	8300	7250	8000	9000	9400
Dow Transportation Average	2375	2000	2000	2850	3250
New highs	68	85	85	120	200
New lows	75	60	80	75	20
Volume up	600 000 000	836 254 123	275 637 497	875 365 980	1 159 534 297
Volume down	600 000 000	263 745 877	824 362 503	424 634 020	313 365 599
Managed fund cash (trillions of dollars)	$0.31	$0.32	$0.47	$0.61	$0.74
Total assets managed (trillions of dollars)	$6.94	$6.40	$6.78	$6.73	$7.42

QUESTIONS

1. Based on the data presented in the table, calculate a value (where appropriate) for periods 1 through 5, for each of the four measures listed above. Chart your results, where applicable.
2. Discuss each measure individually and note what it indicates for the market as it now stands. Taken collectively, what do these four measures indicate about the current state of the market? According to these measures, is this a good time for Deb to consider getting into the market, or should she wait a while? Explain.
3. Comment on the time periods used in the table, which are not defined here. What if they were relatively long intervals of time? What if they were relatively short? Explain how the length of the time periods can affect the measures.

Excel with Spreadsheets

Technical analysis looks at the demand and supply for securities based on trading volumes and price studies. Charting is a common method used to identify and project price trends in a security. Some of the well-known approaches to charting include Bollinger bands, directional movement index, exponential moving average, historical price volatility, moving average, candlestick charting and point-and-figure charts.

Moving average is probably the most widely used and popular approach. It can indicate the direction of a trend, and it can be used as an overbought/oversold indicator.

Replicate the following technical analysis for Stockland (SGP):

1. Go to <www.asx.com.au/research/companies>.
2. Type in the code for Stockland (SGP).
3. Click on 'price history chart'.

This chart shows the daily prices for the ASX 200 and SGP, and the moving average price for Stockland. The moving average is defined in the terms as:

> **Moving average**—The average value of a security over a period of time. A moving average helps to smooth out volatility in a security's price or volume. For example, a 20-day average of closing prices is calculated by adding the last 20 closing prices for the security and dividing by 20.[†]

[†] Australian Securities exchange website, <www.asx.com.au/research/charting/overview.htm>.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Questions

1. Choose a date at the end of the previous three months. What was the relation between the daily price for SGP and its moving average in each of the three months?
2. Was the MA moving up, moving down or staying steady at this time?
3. During the following 15 days, how did the price of the share behave?
4. Is this movement in line with what a technician would predict?
5. Looking at the 6–8-month period as a whole, does the MA line predict movements in share price?
6. Does the MA move up or down over the 6–8-month period? What about the price?
7. Is there a point at which the MA direction was contrary to that of the share price, and the signal indicated that you should have sold/bought?

Analysing securities is as much an art as a science. Fundamental analysts study financial statements to assess the value of a share. Technical analysts believe that fundamentals have already been incorporated into the share price, and that it is the forces of supply and demand that play a major role in the direction of share price movements. The art of charting price trends to determine buying and selling opportunities is their mainstay.

The sites below contain useful information about methods of technical analysis and charting, and access to charts for Australian companies.

WEBSITE	URL
Australian Securities Exchange	www.asx.com.au
Money	http://money.ninemsn.com.au/shares-and-funds
Trading.com.au	www.trading.com.au/stock/charts-stock/stock-chart-analysis
Trading Room	www.tradingroom.com.au
Yahoo!7 Finance	http://au.finance.yahoo.com

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CFA EXAM QUESTIONS

INVESTING IN SHARES

Following is a sample of 11 Level 1 CFA exam questions that deal with many of the topics covered in Chapters 6, 7, 8 and 9 of this text, including the use of financial ratios, various share valuation models and efficient market concepts. (*Note:* When answering some of the questions below, remember: 'Forward P/E' is the same as a P/E based on estimated earnings one year out.) (When answering the questions, give yourself 1½ minutes for each question; the objective is to correctly answer eight of the 11 questions in a period of 16½ minutes.)

1. Which of the following ratios would be *most useful* in determining a company's ability to cover its debt payments?
   a. ROA b. Total asset turnover c. Fixed charge coverage

2. An analyst gathered the following data for a company:

	2003	2004	2005
ROE	19.8%	20.0%	22.0%
Return on total assets	8.1%	8.0%	7.9%
Total asset turnover	2.0	2.0	2.1

   Based only on the information above, the *most* appropriate conclusion is that, over the period 2003 to 2005, the company's:
   a. net profit margin and financial leverage have decreased
   b. net profit margin and financial leverage have increased
   c. net profit margin has decreased but its financial leverage has increased

3. In general, a creditor would consider a decrease in which of the following ratios to be positive news?
   a. Interest coverage b. Debt to total assets c. Return on assets (times interest earned)

4. What does the P/E ratio measure?
   a. The 'multiple' that the stock market places on a company's EPS.
   b. The relationship between dividends and market prices.
   c. The earnings for one common share of stock.

5. What is the value of a $100 par preferred stock issue with an annual dividend of $7.50 and a required rate of return of 12%?
   a. $100.00 b. $62.50 c. $72.50

6. The expected return on the market for next period is 16%. The risk-free rate of return is 6%, and Zebra Company has a beta that is 20% greater than the overall market. The required rate of return for this company is closest to:
   a. 14% b. 15% c. 18%

7. Analysts wish to value a firm with the following characteristics. Last year the firm paid a dividend of $4.00 per share. Expectations are that the firm can increase earnings and dividends at the rate of 25% for the next five years, but after that competitive forces will force the growth rate down to 6% for the foreseeable future. What is the best estimate of the stock's value if the required rate of return is 12%?
   a. $145.67 b. $150.52 c. $165.45

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

8. Consider a company that earned $4.00 per share last year and paid a dividend of $1.00. The firm has maintained a consistent payout ratio over the years and analysts expect this to continue. The firm is expected to earn $4.40 next year, the investor plans to hold the stock for 3 years, the required rate of return is 12%, and the expected price of the stock at the end of the third year is $45. The implied expected growth rate is expected to remain constant indefinitely. What is the *best* estimate of the stock's current value?
   a. $34.92 b. $38.82 c. $55.00

9. An analyst made the following statement: 'Neither price-to-book value ratios nor price-to-sales ratios are useful in valuing firms whose earnings are abnormally high or low.' Is the analyst's statement correct with respect to:

	price-to-book value ratios?	price-to-sales ratios?
a.	No	No
b.	No	Yes
c.	Yes	No

10. McDonald's Corp. has a current market value of $44 per share. The earnings per share (EPS) reported in the last year was $2.02. The expected EPS for the current year is $2.42 and for the next year is $2.68. McDonalds' forward P/E ratio is *closest* to:
   a. 16.42 b. 18.18 c. 21.78

11. Each of the following represents an anomaly that challenges the semistrong-form efficient market hypothesis *except*:
   a. the January effect b. low P/E stocks c. stock splits

(*Source:* From Professional Exam Review. *CFA Candidate Study Notes, Level 1,* Volume 4, 2e. © 2009 Delmar Learning, a part of Cengage Learning, Inc. Reproduced by permission. <www.cengage.com/permissions>.)

Answers: 1. b; 2. a; 3. a; 4. c; 5. a; 6. a; 7. a; 8. c; 9. a; 10. b; 11.a.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

PART FOUR

Investing in Fixed-Income Securities

10 Fixed-Income Securities

11 Bond Valuation

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER

10

Fixed-Income Securities

LEARNING GOALS

After studying this chapter, you should be able to:

- **LG1** Explain the basic investment attributes of bonds and their use as investment vehicles.
- **LG2** Describe the essential features of a bond, note the role that bond ratings play in the market, and distinguish among different types of call, refunding and sinking-fund provisions.
- **LG3** Explain how bonds are priced in the market and why some bonds are more volatile than others.
- **LG4** Identify the different types of bonds and the kinds of investment objectives these securities can fulfil.
- **LG5** Discuss the global nature of the bond market and the difference between dollar-denominated and non-dollar-denominated foreign bonds.
- **LG6** Describe the basic features and characteristics of convertible securities, and measure the value of a convertible.

One of the effects of the global financial crisis in Australia is likely to be an expansion of the company bond market.

The Australian Securities and Investments Commission is observing how the local bond market might expand. 'We are in discussions with a number of players about the importance of debt markets,' said commissioner Belinda Gibson.

Both the government and company bond markets in Australia are quite small by international standards, as a consequence of reduced government debt over the past twenty years, and investors' enthusiasm for profitable and sometimes speculative equity investments.

But this is expected to change, as banks and other companies look to diversify their funding sources by focusing on local sources, and local investors adopt more conservative investment strategies and increase their fixed income holdings. In particular, issues of longer term bonds are anticipated, which will lengthen the yield curve and enhance vital market information on risk and return within Australia.

Reserve Bank of Australia figures show that most company bond issues in 2009 were offshore, and had grown at over 10% per annum since 2007. The RBA's head of domestic markets John Broadbent said local companies had returned to issue bonds in 2009, mainly to replace bank loans, which had become much more expensive and harder to obtain.

Commonwealth Bank of Australia Ltd (CBA) group treasurer Lyn Cobley argued for a change to government regulation regarding superannuation, requiring it to be invested in Australia.

All of these factors point to the enhanced importance of bond markets in Australia in the near future.

(*Source:* David McIntyre 2009, 'Corporate bond market likely to expand', *The Age*, 10 November, <http://news.theage.com.au>.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Why Invest in Bonds?

LG 1

bonds
publicly traded long-term debt securities, whereby the issuer agrees to pay a fixed amount of interest over a specified period of time and to repay a fixed amount of principal at maturity.

In contrast to shares, *bonds are liabilities*—publicly traded IOUs where the bondholders are actually *lending money* to the issuer. Technically, **bonds** are negotiable, publicly traded, long-term debt securities. The term bond, traditionally reserved in Australia for long-term government debt, now has wide application in non-government debt issues. They are issued in various denominations, by a variety of borrowing organisations, including the Commonwealth Government, state governments and companies.

Bonds are often referred to as *fixed-income securities* because the debt payments of the issuers are usually fixed. That is, in most cases the issuing organisation agrees to pay a fixed amount of interest periodically and to repay a fixed amount of principal at maturity. Like shares, bonds can potentially provide investors with two kinds of income: (1) current income, and (2) capital gains. The current income, of course, comes from the periodic interest payments paid over the life of the issue. The capital gain component is a little different. Because the companies issuing bonds promise to repay a fixed amount when the bonds mature, bond prices do not typically rise in step with a firm's profits as shares do.

However, bond prices do rise and fall as market interest rates change. A basic relationship that bond investors must keep in mind is that *interest rates and bond prices move in opposite directions*. When interest rates rise, bond prices fall, and when rates drop, bond prices move up. We'll have more to say about this relation later in the chapter, but here's the intuition behind it. Imagine that you buy a brand-new bond issued by a company like Telstra paying 6% interest. Suppose that a month later, market rates have risen, and new bonds pay investors 7% interest. If you want to sell your Telstra bond, you're likely to experience a capital loss because investors will not want to buy a bond paying 6% interest when the going rate in the market is 7%. With fewer buyers interested in them, Telstra bonds will decline in value. Happily, the opposite outcome can occur if market rates fall. When the going rate on bonds is 5%, your Telstra bond paying 6% would command a premium in the market. Taken together, the current income and capital gains earned from bonds can lead to attractive returns.

Investors can trade a wide variety of bonds in the market, from relatively safe issues sought by conservative investors to highly speculative securities appropriate for investors who can tolerate a great deal of risk. In addition, the potential risks and returns offered by *all* types of bonds depend in part upon the volatility of interest rates. Because interest rate movements cause bond prices to change, higher interest rate volatility makes bond returns less predictable.

Corporate bonds are fast becoming significant in Australian financial markets. Other bond securities, debentures and notes have been dominant in Australia, especially in the finance industry. Debentures are corporate bonds supported by a charge over the assets of the corporate issuer. They generally carry interest as well as the principal redeeming features of bonds. Notes (unsecured notes) are bond issues not supported by some form of underlying security and that pay higher interest than debentures and corporate bonds.

Some bonds have special features designed to appeal to certain types of investors. For example, despite the term 'fixed income', some bonds make interest payments that vary through time. Governments in many other countries issue inflation-indexed bonds with interest payments that rise with inflation. Those bonds appeal to investors who want some protection from the risk of rising inflation. The Reserve Bank of Australia (RBA) operates a facility where small investors can buy and sell Treasury bonds in amounts of $1000 face value and in multiples of $1000 up to a limit of $100 000 per investor per day.

INVESTOR FACTS

TREASURY NOTES (T-NOTES)—Treasury notes differ from Treasury bonds. A T-note is a discount security issued on behalf of the Commonwealth Government and sold by weekly tender by the Reserve Bank. They are issued with maturities of five, 13 or 26 weeks, and sold through the Reserve Bank Information and Transfer System (RITS).

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

In addition, certain types of bonds can be used for tax planning: investment bonds offered by life companies and friendly societies are perhaps the best known in this regard. Because of the general high quality of many bond issues, they can also be used for the preservation and long-term accumulation of capital. With quality issues, not only do investors have a high degree of assurance that they will get their money back at maturity, but the stream of interest income is also highly dependable.

Putting Bond Market Performance in Perspective

Interest rates drive the bond market. In fact, *the behaviour of interest rates is the single most important influence on bond returns*. Interest rates determine not only the current income that investors will receive but also the capital gains (or losses) they will incur. It's not surprising, therefore, that bond-market participants follow interest rates closely and that when commentators in the news media describe how the market has performed on a particular day, they usually speak in terms of what happened to bond yields that day rather than what happened to bond prices.

Figure 10.1 provides a look at interest rates on bonds issued by companies and the Australian Government from 1998 to 2010. It shows that rates were steady at around 5–6% for much of the period. There was a brief rise and subsequent fall in the 1999–2001 period. Also, for most of the period, rates moved together very closely, and the **yield** (or **credit**) **spread** between goverment bond rates and company bond rates was low and consistent.

yield (or **credit**) **spread** the difference between the rate on company bonds and the rate on goverment bonds

2007 was the year of disturbance in all financial markets, and bonds were no exception. As rates rose prior to the global financial crisis, spreads began to increase. But the subsequent fall in rates that was lead by the government's response to the global financial crisis saw spreads of up to five times their historical level. Corporate rates did not follow the trend in government rates during this period of intense uncertainty on global financial markets. By 2010, rates have returned to levels that are close to their long-term average. However, spreads have remained wider, reflecting some remaining uncertainty in the markets and weaker business conditions that increase the risk of default.

Historical Returns As with shares, *total returns* in the bond market are made up of both current income and capital gains (or losses). Table 10.1 (page 324) reports historic returns on bonds in Australia, averaged over a variety of periods between 1883 and 2005. In the most recent period, 1988–2005, the average return (both arithmetic and geometric) was 7.7% per annum, or 4.4% after adjusting for inflation. By comparison, the average return in the United States was 10.5% over a comparable period.

Bonds Versus Shares Compared to shares, bonds are generally less risky and provide higher current income. Bonds, like shares, are issued by a wide range of companies as well as various governmental bodies, so investors can construct well-diversified portfolios with bonds, just as they do with shares. On the other hand, the potential for very high returns on bonds is much more limited compared to shares.

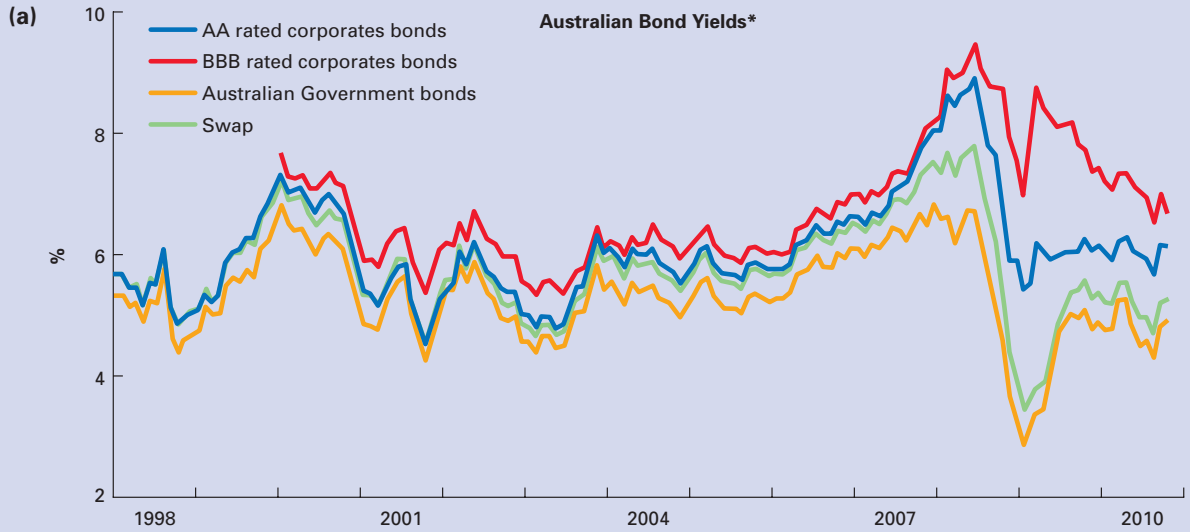
Table 10.2 (page 324) shows the historical equity risk premium in Australia for a variety of periods between 1883 and 2005, both unadjusted and adjusted for the value of dividend imputation credits. For the most recent period, the equity risk premium is between 4.0% and 5.1% (or 6% to 7% adjusted). In Australia, for all of the periods presented, the expectation that investors earn more on shares than bonds over long investment horizons is met. If shares are riskier, then investors should, on average, earn higher returns on shares than on bonds, and we know from the historical evidence presented in Chapter 4 that shares have outperformed bonds over long investment horizons.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

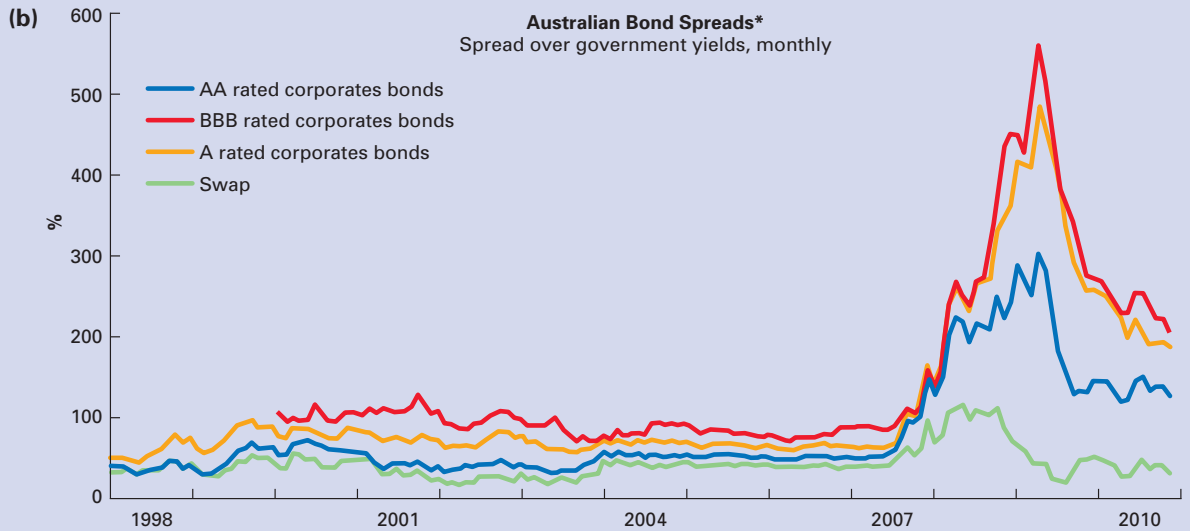
FIGURE 10.1 **The Behaviour of Interest Rates Over Time, 1998–2010**

(a) Interest rates rose and fell slightly in the 1999–2001 period. There was a more marked increase in the boom period 2005–2007, prior to the global financial crisis downturn in 2008, which saw rates plummet before recovering to long-term average rates.

(b) The spead between yields shows how closely various rates move together for most of the period prior to them blowing apart during the global financial crisis.



* Australian Government yields and swap rates are for three-year maturity. Corporate bond yields are a weighted average of senior bonds with remaining maturities of one to five years; they include financial and non-financial corporates.



* Swap spreads are for three-year maturity. Corporate bond spreads are a weighted average of senior bonds with remaining maturities of one to five years; they include financial and non-financial corporates.

(*Source:* Reserve Bank of Australia, <www.rba.gov.au/chart-pack/interest-rates.html> © Reserve Bank of Australia 2001–2010. All rights reserved.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 10.1 Historical bond returns, 1883–2005

		Nominal			Real		
Period	Years	AM	SD	GM	AM	SD	GM
1883–2005	123	0.057**	0.030	0.056	0.025**	0.051	0.023
1937–2005	69	0.068**	0.035	0.068	0.015**	0.043	0.014
1958–2005	48	0.082**	0.034	0.081	0.028**	0.032	0.027
1980–2005	26	0.096**	0.036	0.095	0.045**	0.023	0.045
1988–2005	**18**	**0.077****	**0.027**	**0.077**	**0.044****	**0.023**	**0.044**
1883–1987	105	0.053**	0.029	0.053	0.021**	0.054	0.020
1990–2000	101	0.060**	0.032	0.060	0.021**	0.052	0.020
1883–1957	75	0.041**	0.009	0.041	0.023**	0.060	0.021

This table sets out various statistics of the historical return on bonds over a number of sample periods from January 1883 to December 2005. AM is the arithmetic mean, SD is the standard deviation, and GM is the geometric mean. The base data is an annual series of yields on long-term government securities as at December of each year. Calculations are based on discrete returns. The real return each year is equal to the geometric difference between the nominal return and the inflation rate. ** indicates significance at the 5% level based on a two-tailed *t*-test.

(*Source:* T. Brailsford, J. Handley and K. Maheswaran, 'Re-examination of the historical equity risk premium in Australia', *Accounting and Finance,* Vol 48, Issue 1, pp. 73–97, Tables 3, 4 and 5, March 2008.

TABLE 10.2 (a) Historical equity risk premium in Australia, 1883–2005, relative to bonds

		Nominal			Real		
Period	Years	AM	SD	GM	AM	SD	GM
1883–2005	123	0.062**	0.160	0.049	0.061**	0.051	0.050
1937–2005	69	0.058**	0.191	0.040	0.056**	0.178	0.041
1958–2005	48	0.063**	0.220	0.040	0.061**	0.205	0.041
1980–2005	26	0.060	0.217	0.038	0.057	0.203	0.038
1988–2005	**18**	**0.051**	**0.150**	**0.040**	**0.050**	**0.145**	**0.040**
1883–1987	105	0.064**	0.162	0.051	0.063**	0.153	0.052
1990–2000 (simple diff)	101	0.062**	0.168	0.048	0.061**	0.158	0.049
1990–2000 (geometric diff)	101	0.059**	0.155	0.047	0.059**	0.155	0.047
1883–1957	75	0.061**	0.106	0.056	0.061**	0.106	0.056

(b) Historical equity risk premium in Australia, 1883–2005 (grossed-up for the value of imputation credits assuming credits are fully valued), relative to bonds

1883–2005	123	0.065**	0.160	0.052	0.064**	0.152	0.053
1937–2005	69	0.063**	0.191	0.045	0.061**	0.178	0.046
1958–2005	48	0.070**	0.220	0.047	0.068**	0.205	0.048
1980–2005	26	0.073	0.218	0.052	0.070	0.203	0.051
1988_2005	**18**	**0.070**	**0.151**	**0.060**	**0.069**	**0.147**	**0.059**
1883–1987	105	0.064**	0.162	0.051	0.063**	0.153	0.052
1990–2000 (simple diff)	101	0.065**	0.168	0.051	0.063**	0.158	0.051
1990–2000 (geometric diff)	101	0.061**	0.155	0.049	0.061**	0.155	0.049
1883–1957	75	0.061**	0.106**	0.056	0.061**	0.106	0.056

This table sets out various statistics of the historical equity risk premium over a number of sample periods from January 1883 to December 2005. AM is the arithmetic mean, SD is the standard deviation, and GM is the geometric mean of returns. The base data is: (i) an annual series of nominal equity premiums defined as the (simple) difference between the nominal share return and the nominal risk free rate; and (ii) an annual series of real equity premiums defined as the (simple) difference between the real share return and the real risk-free rate, where the real return each year is equal to the geometric difference between the nominal return and the inflation rate. For the period 1900–2000, we also show results for equity premiums defined as the geometric difference between the share return and the risk-free rate. In (a), the share return is based on a share accumulation index and takes into account cash dividends and capital gains only. In (b), the share return is based on a share accumulation index and takes into account cash dividends, capital gains and the value of imputation credits assuming credits are fully valued. Two measures of the risk-free rate are used: the return on bills and the return on bonds. Calculations are based on discrete returns. ** indicates significance at the 5% level based on a two-tailed *t*-test.

(*Source:* T. Brailsford, J. Handley and K. Maheswaran, 'Re-examination of the historical equity risk premium in Australia', *Accounting and Finance,* Vol 48, Issue 1, pp. 73–97, Tables 3, 4 and 5, March 2008.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Most investors would agree that even if bonds earn lower returns than shares on average, that's a small price to pay for *the level of stability that bonds bring to a portfolio*. The fact is, bond returns are far more stable than share returns, plus they possess *excellent portfolio diversification properties*. As a general rule, adding bonds to a portfolio will, *up to a point*, reduce the portfolio's risk without dramatically reducing its return. Investors don't buy bonds for their high returns, except when they think interest rates are heading down. Rather, investors buy them for their current income and/or for the stability they bring to a portfolio.

Exposure to Risk

Like all other investments, bonds are subject to a variety of risks. Generally speaking, bonds are exposed to five major types of risks: interest rate risk, purchasing power risk, business/financial risk, liquidity risk and call risk.

- ***Interest Rate Risk.*** Interest rate risk is the most important risk that fixed-income investors must face, *because it's the major cause of price volatility in the bond market*. For bonds, interest rate risk translates into market risk, meaning that the behaviour of interest rates affects nearly *all* bonds and cuts across *all* sectors of the market, even the Commonwealth Government market. When market interest rates rise, bond prices fall, and vice versa. As interest rates become more volatile, so do bond prices.
- ***Purchasing Power Risk.*** Inflation erodes the purchasing power of money, and that creates purchasing power risk. Investors are aware of this, of course, so market interest rates on bonds compensate investors for the rate of inflation *that they expect* over the life of a bond. When inflation is low and predictable, bonds do pretty well, because their returns exceed the inflation rate by an amount sufficient to provide investors with a positive return, even after accounting for inflation's effect on purchasing power. When inflation takes off unexpectedly, as it did in the late 1970s, bond yields start to lag behind inflation rates, and the interest payments made by bonds fail to keep up. The end result is that the purchasing power of the money that bond investors receive falls faster than they anticipated. That's what the term 'purchasing power risk' means. Of course, risk cuts both ways, so when the inflation rate falls unexpectedly, bonds do exceptionally well.
- ***Business/Financial Risk.*** This is basically the risk that the *issuer will default on interest and/or principal payments*. Also known as *credit risk* or *default risk*, business/financial risk has to do with the quality and financial viability of the issuer. The stronger the financial position of the issuer, the less business/financial risk there is to worry about. Default risk is essentially zero for some securities (e.g. Commonweath Government bonds). For others, such as corporate and municipal bonds, it's a very important consideration.
- ***Liquidity Risk.*** Liquidity risk is the risk that a bond will be difficult to sell at a reasonable price if the investor wants to sell it. In certain sectors of the market, this can be a big problem because many bonds do not trade actively once they are issued. There is a secondary market for Treasury bonds. Trading activity is for three-year and 10-year bonds. An increase in the number of traders and the advent of bond-futures contracts have assisted the development of a market. By contrast, corporate bonds are currently thinly traded.
- ***Call Risk.*** Call risk, or *prepayment risk*, is the risk that a bond will be 'called' (retired) long before its scheduled maturity date. Issuers often prepay their bonds

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

when interest rates fall. (We'll examine call features later in this chapter.) When issuers call their bonds, the bondholders get their cash back and have to find another place for their funds—and there's the problem. Because bonds are nearly always called for prepayment after interest rates have fallen, comparable investments just aren't available. Thus, investors have to replace high-yielding bonds with much lower-yielding bonds.

The returns on bonds are, of course, related to risk—other things being equal, the more risk embedded in a bond, the greater the expected return. The risks of investing in bonds depend upon the characteristics of the bond and the entity that issued it. For example, as we'll see later in the chapter, there's more interest rate risk with a long-term bond than with a short-term bond. In addition, for particular bonds, the characteristics that affect risk may have offsetting effects, and that makes risk comparisons between bonds difficult. That is, one issue could have *more* interest rate and call risk, but *less* credit and liquidity risk than another issue. We'll examine the various features that affect a bond's risk exposure as we work our way through this chapter.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

10.1 What appeal do bonds hold for investors? Give several reasons why bonds make attractive investment outlets.

10.2 How would you describe the behaviour of market interest rates and bond returns over the last 30 years? Do swings in market interest rates have any bearing on bond returns? Explain.

10.3 Identify and briefly describe the five types of risk to which bonds are exposed. What is the most important source of risk for bonds in general? Explain.

Essential Features of a Bond

LG2 LG3

A *bond* is a negotiable, long-term debt instrument that carries certain obligations (the payment of interest and the repayment of principal) on the part of the issuer. Because bondholders are only lending money to the issuer, they are not entitled to any of the rights and privileges associated with ordinary shares, such as the right to vote at shareholders' meetings. But bondholders, as well as bond issuers, do have a number of well-defined rights and obligations that together define the essential features of a bond. We'll now take a look at some of these features. As you will see, when it comes to bonds, it's especially important to know what you're getting into, *for many seemingly insignificant features can have dramatic effects on price behaviour and investment return.*

Bond Interest and Principal

coupon
a feature on a bond that defines the amount of annual interest income.

current yield
a measure of the annual interest income that a bond provides relative to its current market price.

A bond investor's return is limited to fixed interest and principal payments as long as the investor holds the bond to maturity. Most bonds pay interest every six months, although some make monthly interest payments and some pay interest annually. A bond's **coupon** defines the annual interest income that the issuer will pay to the bondholder. For instance, if a bond with a face value (or principal) of $1000 pays $80 in interest each year, we say that $80 is the coupon and 8% is the coupon rate. If the bond makes semi-annual payments, there would be two $40 payments every six months. The bond's **current yield** measures the interest component of a bond's return. The current yield

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

equals the annual coupon divided by the bond's market price. For example, if an 8% bond is currently priced in the market at $875, then it would have a current yield of 9.14%: ($1000 × 0.08) ÷ $875 = $80 ÷ $875 = 0.0914.

principal
on a bond, the amount of capital that must be paid at maturity.

The **principal** of a bond, also known as an issue's *par value*, specifies the amount of capital that must be repaid at maturity. Note that a bond's market price need not, and usually does not, equal its par value. As we have discussed, bond prices fluctuate as interest rates move, yet a bond's par value remains fixed over its life.

Maturity Date

maturity date
the date on which a bond matures and the principal must be repaid.

Unlike ordinary shares, all debt securities have limited lives and will mature on some future date, the issue's **maturity date**. Whereas bond issuers make interest payments semi-annually over the life of the issue, they repay principal only at maturity. The maturity date on a bond is fixed. It not only defines the life of a new issue but also denotes the amount of time remaining for older, outstanding bonds. Such a life span is known as an issue's *term to maturity*. For example, a new issue may come out as a 25-year bond; five years later, it will have 20 years remaining to maturity.

term bond
a bond that has a single, fairly lengthy maturity date.

serial bond
a bond that has a series of different maturity dates.

We can distinguish two types of bonds based on the issuer's plans to mature the debt: term and serial bonds. A **term bond** has a single, fairly lengthy maturity date and is the most common type. A **serial bond**, in contrast, has a series of different maturity dates, perhaps as many as 15 or 20, within a single bond offering. For example, a 20-year term bond issued in 2010 has a single maturity date of 2030. That same issue as a serial bond might have 20 annual maturity dates, extending from 2010 through 2030. At each of these annual maturity dates, a certain portion of the issue would mature.

Principles of Bond Price Behaviour

The price of a bond is a function of its coupon, its maturity, and the level of market interest rates. Figure 10.2 (overleaf) captures the relationship of bond prices to market interest rates. The graph reinforces the *inverse relationship* that exists between bond prices and market rates: *lower* rates lead to *higher* bond prices.

premium bond
a bond with a market value in excess of par; occurs when interest rates drop below the coupon rate.

discount bond
a bond with a market value lower than par; occurs when market rates are greater than the coupon rate.

Figure 10.2 also shows the difference between premium and discount bonds. A **premium bond** is one that sells for more than its par value. A premium results when market interest rates drop below the bond's coupon rate. A **discount bond**, in contrast, sells for less than par. The discount is the result of market rates being greater than the issue's coupon rate. Thus, the 10% bond in Figure 10.2 trades at a premium when market rates are at 8%, but at a discount when rates are at 12%.

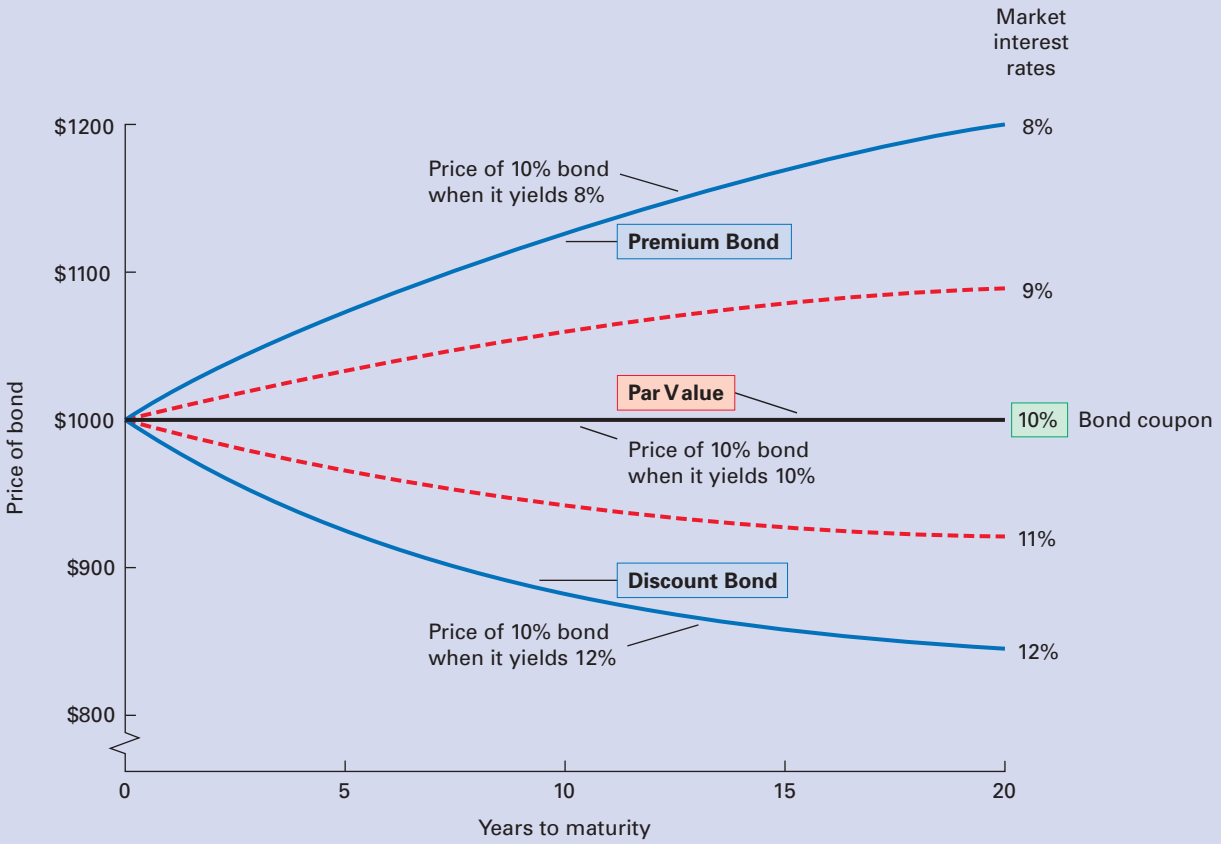
When a bond is first issued, it usually sells at a price that equals or is very close to par value. Likewise, when the bond matures—some five or 10 years later—it will once again be priced at its par value. What happens to the price of the bond in between is of considerable interest to most bond investors. In this regard, the extent to which bond prices move depends not only on the *direction* of change in interest rates but also on the *magnitude* of such change: the greater the moves in interest rates, the greater the swings in bond prices.

However, bond price volatility also varies according to an issue's coupon and maturity. That is, bonds with *lower coupons* and/or *longer maturities* have *a lot of price volatility* and are more responsive to changes in market interest rates. (Note in Figure 10.2 that for a given change in interest rates—e.g. from 10% to 8%—the largest change in price occurs when the bond has the greatest number of years to maturity.) Therefore, if you expect a *decline* in interest rates, you should buy bonds with lower coupons and longer maturities (to maximise capital gains). When interest rates

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 10.2 The Price Behaviour of a Bond

A bond will sell at its par value so long as the prevailing market interest rate remains the same as the bond's coupon—in this case, 10%. However, even when the market rate does not equal the coupon rate, as a bond approaches its maturity, the price of the issue moves towards its par value.



move *up*, you should do just the opposite: purchase bonds with high coupons and short maturities. This choice will minimise price variation and act to preserve as much capital as possible.

Actually, the *maturity* of an issue has a greater impact on price volatility than the coupon does. For example, look what happens to the price of an 8% bond when market interest rates move up or down:

	Percentage Change in the Price of an 8% Coupon Bond When Interest Rates Are:					
Bond Maturity	5%	6%	7%	9%	10%	11%
5 years	13.00%	8.40%	4.10%	−3.90%	−7.60%	−11.10%
25 years	42.30%	25.60%	11.70%	−9.80%	−18.20%	−25.30%

The prices of both bonds rise when interest rates fall, but the effect is much larger for the longer-term bond. Similarly, both bonds fall in value when rates rise, but the long-term bond falls a lot more than the short-term bond does. Such behaviour is universal

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

with all fixed-income securities and is very important. It means that if investors want to reduce their exposure to capital losses or, more to the point, to lower the price volatility in their bond holdings, then they should buy bonds with shorter maturities.

Call Features—Let the Buyer Beware!

Consider the following situation: you've just made an investment in a high-yielding, 10-year bond. Now you can sit back and let the cash flow in, right? Well, perhaps. Certainly, that will happen for the first several years. But, if market interest rates drop, it's also possible that you'll receive a notice from the issuer that the bond is being *called*—that the issue is being retired before its maturity date. There's really nothing you can do but turn in the bond and invest your money elsewhere. Many bonds are issued with a **call feature**, which stipulates whether and under what conditions a bond can be called in for retirement prior to maturity.

call feature
feature that specifies whether and under what conditions the issuer can retire a bond prior to maturity. This feature is not common in bond issues in Australia.

There are three types of call features:

1. A bond can be *freely callable*, which means the issuer can prematurely retire the bond at any time.
2. A bond can be *non-callable*, which means the issuer is prohibited from retiring the bond prior to maturity.
3. The issue could carry a *deferred call*, which means the issue cannot be called until after a certain length of time has passed from the date of issue. In essence, the issue is non-callable during the deferment period and then becomes freely callable thereafter.

Call features allow bond issuers to take advantage of declines in market interest rates. Companies usually call outstanding bonds paying high rates and then reissue new bonds at lower rates. In other words, call features work *for the benefit of the issuers. When a bond is called, the net result is that the investor is left with a much lower rate of return than anticipated.*

Investors who find their bonds called out from under them do receive a small amount of extra compensation called the **call premium**. If the issue is called, the issuer will pay the call premium to investors, along with the issue's par value. The sum of the par value plus call premium represents the issue's **call price**. This is the amount the issuer must pay to retire the bond prematurely. As a general rule, call premiums usually equal about eight to 12 months' interest at the earliest date of call and then become progressively smaller as the issue nears maturity. Using this rule, the initial call price of a 9% bond could be as high as $1090, where $90 represents the call premium.

call premium
the amount added to a bond's par value and paid to investors when a bond is retired prematurely.

call price
the price the issuer must pay to retire a bond prematurely; equal to par value plus the call premium.

In addition to call features, some bonds may carry **refunding provisions**. These are much like call features except that they prohibit just one thing: the premature retirement of an issue from the proceeds of a lower-coupon bond. For example, a bond could come out as freely callable but *non-refundable* for five years. In this case, the bond would probably be sold by brokers as a *deferred refunding issue*, with little or nothing said about its call feature. The distinction is important, however: it means that a non-refunding or deferred refunding issue *can still be called and prematurely retired for any reason other than refunding*. Thus, an investor could face a call on a high-yielding non-refundable issue so long as the issuer has so-called 'clean cash' to retire the bond prematurely.

refunding provisions
provisions that prohibit the premature retirement of an issue from the proceeds of a lower-coupon bond.

Currently, call features are not common in Australian corporate bond issues.

Secured or Unsecured Debt

A single issuer may have a number of different bonds outstanding at any given point in time. In addition to coupon and maturity, one bond can be differentiated from another

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

by the type of collateral behind the issue. Issues can be either secured or unsecured. *Secured bonds* are secured obligations, which are backed by a legal claim on some specific property of the issuer. Such issues would include:

- *Mortgage bonds*, which are secured by real estate
- *Collateral trust bonds*, which are backed by financial assets owned by the issuer but held in trust by a third party
- *Equipment trust certificates*, which are secured by specific pieces of equipment (e.g. airplanes)

Unsecured bonds, on the other hand, are backed only by the promise of the issuer to pay interest and principal on a timely basis. There is no collateral backing up the obligation, other than the good name of the issuer. In the final analysis, it's the quality of the issuer that matters. For that reason, highly regarded companies have no trouble selling *billion-dollar unsecured bond issues* and at highly competitive rates.

subordinated debentures
unsecured bonds with a claim on income secondary to other debentures.

income bonds
unsecured bonds requiring that they be paid only after a specified amount of income is earned.

Subordinated debentures can also be found in the market. These issues have a claim on income secondary to other debenture bonds. **Income bonds**, the most junior of all bonds, are unsecured debts requiring that interest be paid only after a certain amount of income is earned. With these bonds, there is no legally binding requirement to meet interest payments on a timely or regular basis so long as a specified amount of income has not been earned.

Bond Ratings

To many investors, an issue's *agency rating* is just as important in defining the characteristics of a bond as are its coupon, maturity and call features. These ratings indicate the amount of *credit risk* embedded in a bond and are widely used by fixed-income investors. **Bond ratings** are like grades: a letter grade that designates investment quality is assigned to an issue on the basis of extensive financial analysis. Ratings are an important part of the company bond markets, where issues are regularly evaluated and rated by one or more of the rating agencies. The two largest and best-known rating agencies are Moody's and Standard & Poor's (S&P); another lesser known but still important bond-rating agency is Fitch Investors Service.

bond ratings
letter grades that designate investment quality and are assigned to a bond issue by rating agencies.

How Ratings Work Every time a large new issue comes to the market, it is analysed by a staff of professional credit analysts who estimate the likelihood that the issuer will default on its obligations to pay principal and interest. The rating agency studies the financial records of the issuing organisation and assesses its future prospects. As you might expect, the company's financial strength and stability are very important in determining the appropriate bond rating. Although there is far more to setting a rating than cranking out a few financial ratios, a strong relationship does exist between the operating results and financial condition of the company and the rating its bonds receive. Generally, higher ratings are associated with more profitable companies that rely *less* on debt as a form of financing, are more liquid, have stronger cash flows and have no trouble servicing their debt in a prompt and timely fashion.

Table 10.3 lists the various ratings assigned to bonds by the two major services. In addition to the standard rating categories noted in the table, Moody's uses numerical modifiers (1, 2 or 3) on bonds rated double-A to B, while S&P uses plus (+) or minus (−) signs on the same rating classes to show relative standing within a major rating category. For example, A+ (or A1) means a strong, high A rating, whereas A− (or A3) indicates that the issue is on the low end of the A rating scale.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 10.3 Bond Ratings

Moody's	S&P	Definition
Aaa	AAA	*High-grade investment bonds.* The highest rating assigned, denoting extremely strong capacity to pay principal and interest. Often called 'gilt-edge' securities.
Aa	AA	*High-grade investment bonds.* High quality by all standards but rated lower primarily because the margins of protection are not quite as strong.
A	A	*Medium-grade investment bonds.* Many favourable investment attributes, but elements may be present that suggest susceptibility to adverse economic changes.
Baa	BBB	*Medium-grade investment bonds.* Adequate capacity to pay principal and interest but possibly lacking certain protective elements against adverse economic conditions.
Ba	BB	*Speculative issues.* Only moderate protection of principal and interest in varied economic times. (This is one of the ratings carried by junk bonds.)
B	B	*Speculative issues.* Generally lacking desirable characteristics of investment bonds. Assurance of principal and interest may be small; this is another junk-bond rating.
Caa	CCC	*Default.* Poor-quality issues that may be in default or in danger of default.
Ca	CC	*Default.* Highly speculative issues, often in default or possessing other market shortcomings.
C		*Default.* These issues may be regarded as extremely poor in investment quality.
	C	*Default.* Rating given to income bonds on which no interest is paid.
	D	*Default.* Issues actually in default, with principal or interest in arrears.

(*Source:* Moody's *Bond Record* and Standard & Poor's *Bond Guide.*)

Note that the top four ratings (Aaa through Baa, or AAA through BBB) designate *investment-grade* bonds. Such ratings are highly coveted by issuers, as they indicate financially strong, well-run companies. Companies and governmental bodies that want to raise money by issuing bonds save money if they have an investment-grade rating because investors will accept lower coupon rates on these bonds compared to those with lower ratings. Bonds with below investment-grade ratings are called high-yield bonds or junk bonds. The issuers of these bonds generally lack the financial strength that backs investment-grade issues. Most of the time, when Moody's and S&P assign ratings to a particular bond issue, their ratings agree. Sometimes, however, an issue carries two different ratings. These **split ratings** are viewed simply as 'shading' the quality of an issue one way or another. For example, an issue might be rated Aa by Moody's but A or A+ by S&P.

split ratings
different ratings given to a bond issue by two or more ratings agencies.

Also, just because a bond receives a certain rating at the time of issue doesn't mean it will keep that rating for the rest of its life. Ratings change as the financial condition of the issuer changes. In fact, all rated issues are reviewed on a regular basis to ensure that the assigned rating is still valid. Many issues do carry a single rating to maturity, but it is not uncommon for ratings to be revised up or down. As you might expect, the market responds to rating revisions by adjusting bond yields accordingly. For example, an upward revision (e.g. from A to AA) causes the market yield on the bond to drop, as a reflection of the bond's improved quality. By the same token, if a company's financial condition deteriorates, ratings on its bonds may be downgraded. In fact, there is a special name given to junk bonds that once had investment-grade ratings—fallen angels.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

One final point: although it may appear that the company is receiving the rating, it is actually the *issue* that receives it. As a result, a company's different issues can have different ratings. The secured issues, for example, might carry one rating and the unsecured issues another, lower rating.

What Ratings Mean Investors pay close attention to agency ratings, because ratings can affect not only potential market behaviour but comparative market yields as well. Specifically, *the higher the rating, the lower the yield*, other things being equal. For example, whereas an A-rated bond might offer a 7.5% yield, a comparable triple-A issue would probably yield something like 7%. Furthermore, investment-grade securities are far more interest-sensitive and tend to exhibit more uniform price behaviour than junk bonds and other lower-rated issues.

Perhaps most importantly, *bond ratings serve to relieve individual investors of the drudgery of evaluating the investment quality of an issue on their own*. Large institutional investors often have their own staff of credit analysts who independently assess the creditworthiness of various corporate issuers. Individual investors, in contrast, have little if anything to gain from conducting their own credit analysis. After all, credit analysis is time-consuming and costly, and it demands a good deal more expertise than the average individual investor possesses. Two words of caution are in order, however. First, bear in mind that bond ratings are intended to measure only an issue's *default risk*, which has no bearing whatsoever on an issue's exposure to *market risk*. Thus, if interest rates increase, even the highest-quality issues go down in price, subjecting investors to capital loss and market risk. Second, ratings agencies do make mistakes, and during the recent financial crisis, their mistakes made headlines.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

10.4 Can issue characteristics (such as coupon and call features) affect the yield and price behaviour of bonds? Explain.

10.5 What are *call features*? Briefly describe the three different types of call features. Can a bond be freely callable but non-refundable?

10.6 What is the difference between a *premium bond* and a *discount bond*? What three attributes are most important in determining an issue's price volatility?

10.7 What are *bond ratings*, and how can they affect investor returns? What are *split ratings*?

10.8 From the perspective of an individual investor, what good are bond ratings? Do bond ratings indicate the amount of market risk embedded in a bond? Explain.

The Market for Debt Securities

LG4 LG5

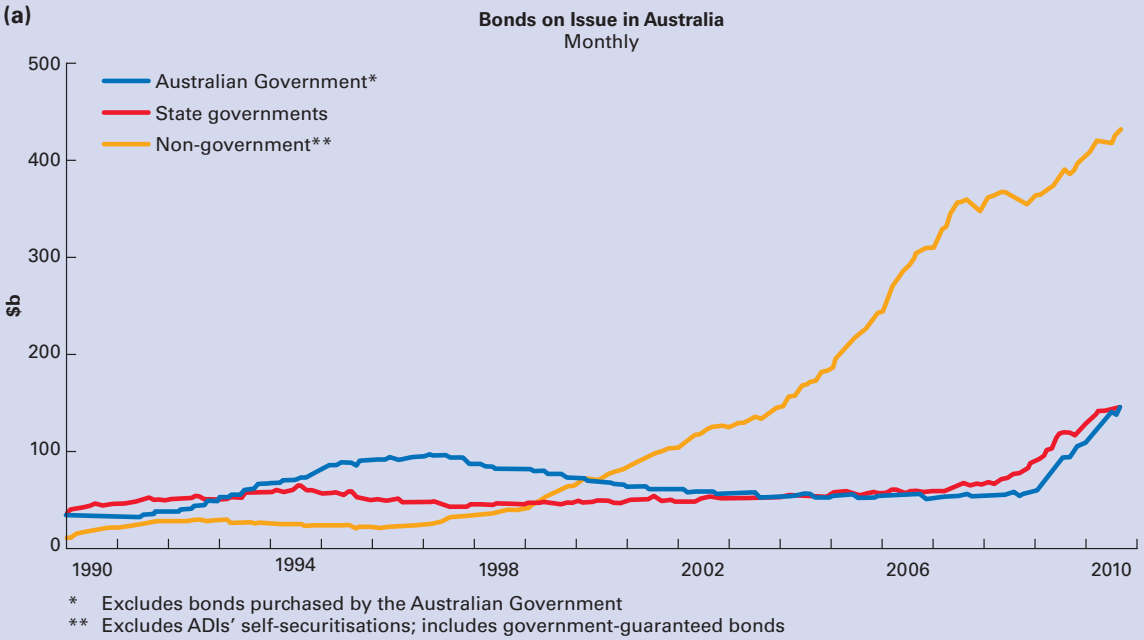
Thus far, our discussion has dealt with basic bond features. We now shift our attention to a review of the market in which these securities are traded. Treasury bonds, for example, are issued in the primary market through a tender process arranged by the Reserve Bank. The secondary market is undertaken by professional dealers (for example, large banks) who trade and quote buy-and-sell yields and who also trade with high-value clients. In addition, this market is far more stable than the share-market. Indeed, although interest rates—and therefore bond prices—do move up and down over time, when bond price activity is measured on a daily basis, it is *remarkably stable*. As indicated in the opening vignette to this chapter, the Australian bond market is small but has grown in recent years and may be poised for further growth in the near future. Figure 10.3 illustrates the volume of bonds on issue in Australia, 1990 to 2010,

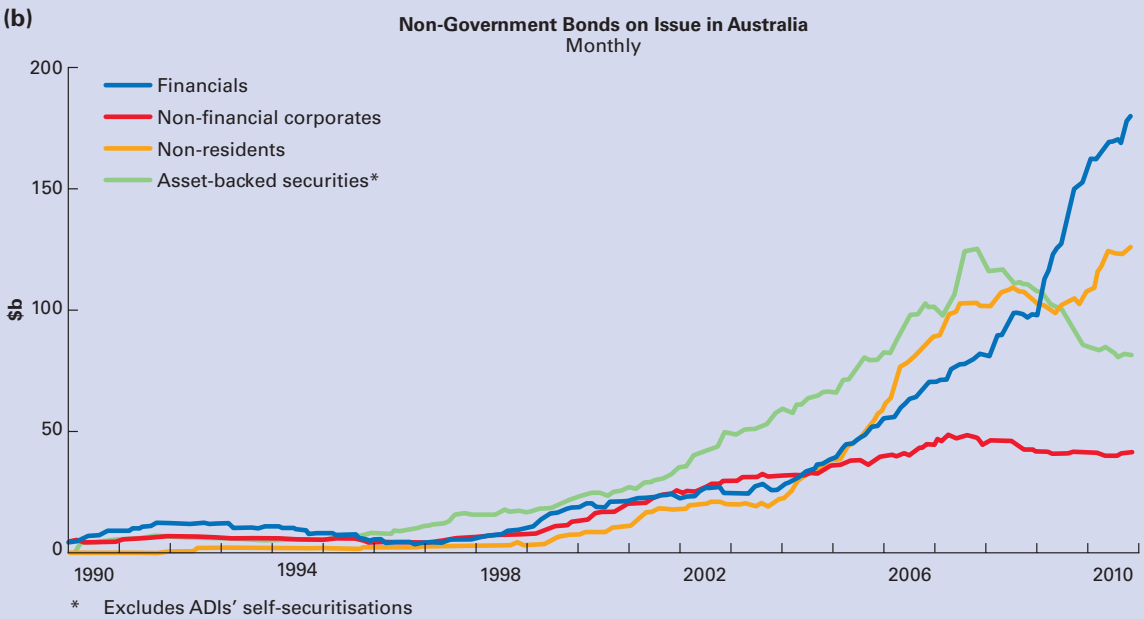
Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 10.3 **The Volume of Bonds in Australia, 1990–2010**

(a) shows the volume of bonds on issue by the Australian Government, state governments and non-government institutions.

(b) shows the volume of bonds on issue by financial institutions, non-financial corporates, non-residents and as asset-backed securities.





(*Source:* Reserve Bank of Australia, <www.rba.gov.au/chart-pack/bond-issuance.html>. © Reserve Bank of Australia 2001–2010. All rights reserved.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

for all bonds and for non-government bonds. The market is dominated by non-government issues, and financial institutions make up the largest and fastest gowing segment of the non-government market.

Major Market Segments

There are bonds available in today's market to meet almost any investment objective and to suit just about any type of investor. As a matter of convenience, the domestic bond market is normally separated into three major segments, according to type of issuer: Commonwealth Government, state government or private. As we shall see, each sector has developed its own features, as well as its own trading characteristics.

Treasury bonds
Commonwealth Treasury (fixed-interest) bonds issued in the wholesale market and subsequently traded by professional dealers; small investors can trade in these bonds through the Reserve Bank.

Treasury Bonds **Treasury bonds** are a force in the fixed-income market, and if not the most popular type of bond, they certainly are the best known. In addition to T-bills (a popular short-term debt security), the Treasury also issues bonds, as well as *indexed bonds*, the Treasury security, introduced in 1985. All Treasury obligations are of the highest quality because they are all backed by the 'full faith and credit' of the government. This feature, along with their liquidity, makes them very popular with individual and institutional investors both here and overseas.

Treasury bonds have maturities of up to 10 years. They are sold in $1000 denominations. Interest income is subject to normal income tax. The Treasury issues its bonds at regularly scheduled tenders, the results of which are widely reported by the financial media. It is through this process that the Treasury establishes the initial yields and coupons on the securities it issues.

Treasury inflation-indexed bonds (TIBS)
a type of Treasury security that provides protection against inflation by adjusting the face value of bonds.

As noted above, a recent form of Treasury security is **Treasury inflation-indexed bonds**. They are also known as **TIBS**, which stands for 'Treasury indexed bonds'. These securities offer investors the opportunity to stay ahead of inflation by periodically adjusting for any inflation that has occurred. That is, if inflation is running at an annual rate of, say, 3%, then at the end of the year, the par (or maturity) value of your bond will increase by 3%. (Actually, the adjustments to par value are done every three months.) Thus, the $1000 par value will grow to $1030 at the end of the first year. If the 3% inflation rate continues for the second year, the par value will once again move up, this time from $1030 to $1061 (or $1030 × 1.03). Unfortunately, the coupons on these securities are set very low, because they are meant to provide investors with so-called *real (inflation-adjusted) returns*. Thus, one of these bonds might carry a coupon of only 4% at a time when regular T-bonds were paying, say, 6.5% or 7%. But there is an advantage even to this: the actual size of *the coupon payment will increase over time as the par value on the bond goes up*. For investors who are concerned about inflation protection, these securities may be just the ticket.

state bonds
bonds issued by an individual Australian state, on behalf of the state government and its instrumentalities.

State Bonds **State bonds** are the issues of states such as New South Wales. Each state has established a single, centralised borrowing authority for the marketing and sale of its securities. The authority borrows on behalf of state governments and their instrumentalities. Such centralisation allows competitive borrowing through better timing, larger-scale issues and concentrated marketing. Bonds are issued to dealer panels who are required both to place new issues and to make a market for them.

corporate bonds
bonds issued by Australian corporations.

Corporate Bonds The main non-governmental issuers of bonds are companies. The market for **corporate bonds** is customarily subdivided into segments: *industrials* (the most diverse of the groups) and *financial issues* (e.g. banks, finance companies). Not

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

only is there a full range of bond quality available in the corporate market, but there is also a wide assortment of different types of bonds, ranging from first-mortgage obligations to convertible bonds, debentures, subordinated debentures, secured subordinated issues and notes (a type of unsecured debt). Interest on corporate bonds is paid semi-annually. The bonds usually come in $1000 denominations and are issued on a term basis with a single maturity date. Maturities usually range from three to 10 years or more. Corporate issues are popular because of their relatively attractive yields.

INVESTOR FACTS

WHO NEEDS LONG-TERM BONDS?—As a rule, you would expect longer term bonds to provide higher yields, and they usually do. But that doesn't necessarily mean they're the best investment. Consider, for example, the results of a 25-year study covering the period from 1980 through 2004. It showed that *intermediate-term bonds (those with maturities of seven to 10 years) typically delivered about 80% or more of the returns obtained from long-term bonds (with maturities of 25 to 30 years), but at roughly half the risk.* This is the perfect risk–return tradeoff: you give up a little return for a much bigger cut in risk.

(*Source:* Ibbotson Associates.)

Specialty Issues

In addition to the basic bonds described above, investors can choose from a number of *specialty issues*—bonds that possess unusual issue characteristics. These bonds have coupon or repayment provisions that are out of the ordinary. Most are issued by corporations, although they are being used increasingly by other issuers as well. Four of the most actively traded specialty issues today are zero-coupon bonds, mortgage-backed securities, asset-backed securities, and high-yield junk bonds.

Zero-Coupon Bonds As the name implies, **zero-coupon bonds** have no coupons. Rather, these securities are sold at a deep discount from their par values and then increase in value over time at a compound rate of return. Thus, at maturity, they are worth much more than their initial investment. Other things being equal, the cheaper the zero-coupon bond, the greater the return an investor can earn; for example, a bond with a 6% yield might cost $420, but one with a 10% yield might cost only $240.

zero-coupon bonds
bonds with no coupons that are sold at a deep discount from par value.

Because they do not have coupons, these bonds do not pay interest semi-annually. In fact, they pay *nothing* to the investor until the issue matures. As strange as it might seem, this feature is the main attraction of zero-coupon bonds. Because there are no interest payments, investors do not have to worry about reinvesting coupon income twice a year. Instead, the fully compounded rate of return on a zero-coupon bond is virtually guaranteed at the rate that existed at the time of purchase.

The foregoing advantages notwithstanding, zeros do have some serious disadvantages. One is that if rates do move up over time, you won't be able to participate in the higher return. (You'll have no coupon income to reinvest.) In addition, zero-coupon bonds are subject to tremendous price volatility: if market rates climb, you'll experience a sizeable capital loss as the prices of zero-coupons plunge. (Of course, if interest rates *drop*, you'll reap enormous capital gains if you hold long-term zeros. Indeed, such issues are unsurpassed in capital gains potential.)

Zeros are issued by corporations and large financial institutions. Some authorities do *not* issue zero-coupon bonds, but *allow government securities dealers to sell regular coupon-bearing notes and bonds in the form of zero-coupon securities*. Essentially, the coupons are stripped from the bond, repackaged, and then sold separately as zero-coupon bonds. For example, a 10-year Treasury note has 20 half-yearly coupon payments, plus one principal payment. These 21 cash flows can be repackaged and sold as 21 different zero-coupon securities, with maturities that range from six months to 10 years. Because they sell at such large discounts, these Treasury strips are often sold in minimum denominations (par values) of $10 000. But with their big discounts, you'll probably pay only about half that amount (or less) for $10 000 worth of 10-year strips.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

mortgage-backed bond
a debt issue secured by a pool of home mortgages.

Mortgage-Backed Securities Simply put, a **mortgage-backed bond** is a debt issue that is secured by a pool of residential and/or commerical mortgages. An issuer puts together a pool of mortgages and then issues securities in the amount of the total mortgage pool. These securities, also known as *pass-through securities* or *participation certificates*, are usually sold in minimum denominations of $10 000. Although their maturities can go out as far as 30 years, the average life is generally much shorter (perhaps as short as eight to 10 years) because many of the mortgages are paid off early.

As an investor in one of these securities, you hold an undivided interest in the pool of mortgages. When a homeowner makes a monthly mortgage payment, that payment is essentially passed through to you, the bondholder, to pay off the mortgage-backed bond you hold. Although these securities come with normal coupons, *the interest is paid monthly rather than half-yearly*. These securities, because of their high face value ($10 000) and their parcel size ($1 million minimum in some cases), are not normal investment vehicles for the general investor. Banks have established these securities, and many issues have been taken offshore.

securitisation
the process of transforming bank lending vehicles such as mortgages into marketable securities.

asset-backed securities (ABS)
securities similar to mortgage-backed securities that are backed by a pool of bank loans, leases and other assets.

Asset-Backed Securities The creation of mortgage-backed securities quickly led to the development of a new market technology—the process of **securitisation**, whereby various lending vehicles are transformed into marketable securities, much like a mortgage-backed security. In recent years, investment bankers sold billions of dollars worth of pass-through securities, known as **asset-backed securities (ABS)**, which are backed by pools of car loans, credit card bills and home equity lines (three of the principal types of collateral), as well as computer leases, hospital receivables, small business loans, truck rentals and even royalty fees.

These securities, first introduced in the mid-1980s, are created when an investment bank bundles together some type of debt-linked asset (such as loans or receivables), and then sells investors—via asset-backed securities—the right to receive all or part of the future payments made on that debt.

Investors are drawn to ABSs for a number of reasons. One is the relatively *high yields* they offer. Another is their *short maturities*, which often extend out no more than three to five years. A third is the *monthly, rather than semi-annual, principal/interest payments* that accompany many of these securities. Also important to investors is their *high credit quality*. That's due to the fact that most of these deals are backed by generous credit protection. For example, the securities are often overcollateralised: the pool of assets backing the bonds may be 25–50% larger than the bond issue itself. For whatever reason, the vast majority of ABSs receive the highest credit rating possible (triple-A) from the leading rating agencies.

junk bonds
high-risk securities that have low ratings but produce high yields.

Junk Bonds **Junk bonds** (or *high-yield bonds*, as they're also called) are highly speculative securities that have received low, sub-investment–grade ratings (typically Ba or B). These bonds are issued primarily by corporations and also by municipalities. Junk bonds often take the form of *subordinated debentures*, which means the debt is unsecured and has a low claim on assets. These bonds are called 'junk' because of their high risk of default. The companies that issue them generally have excessive amounts of debt in their capital structures and their ability to service that debt is subject to considerable doubt.

PIK-bond
a payment-in-kind junk bond that gives the issuer the right to make annual interest payments in new bonds rather than in cash.

Probably the most unusual type of junk bond is something called a **PIK-bond**. PIK stands for *payment in kind* and means that rather than paying the bond's coupon in cash, the issuer can make annual interest payments in the form of additional debt. This 'financial printing press' usually goes on for five or six years, after which time the issuer is supposed to start making interest payments in real money.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

THE LEMONS PROBLEM: SUB-PRIMES AND JUNK BONDS —The 'lemons' problem is well known in financial markets. Originally proposed by George Akerlof in 1970, the lemons problem is that the buyer and seller of any product or service have asymmetric information. The seller knows whether his or her claims about the product or service are true, but the buyer does not. Attempts by sellers of high-quality products and services can be imitated by the seller of a lemon. Hence the buyer will not pay the true value of the product or service because of the possibility that it is a lemon.

In the wake of the global financial crisis, the lemons problem is prevalent. According to the Assistant Governor of the Reserve Bank, Guy Debelle, in a presentation to the Australian Securitisation Forum in November 2007, investors had become wary of all financial products, because of the collapse of the sub-prime mortgage market in the United States, which was reminiscent of the collapse of the junk bond market in the 1980s.

Investors are unable or unwilling to discriminate between good and bad investments at the high risk end of the market. When new products like junk bonds, securitised assets and collateralised debt obligations (CDOs) become more popular, less informed investors enter the market, and poor investing decisions are made. As the markets collapse, the values of all securities fall at the same time.

In Australia, the junk bond market has survived, but only just. It is now a very small part of the broader market for corporate bonds. Securitised assets have been at risk of losing market share in a similar fashion because of the sub-prime crisis. The key to their continued growth is increased transparency, with investors being provided with sufficient information to be able to distinguish between low-quality and high-quality securitised products.

(*Source:* Adapted from Jacob Saulwick 2007, 'RBA: Credit Crunch Just Like In The Junk Bond Days', *Sydney Morning Herald*, 30 November, <www.smh.com.au>.)

Why would any rational investor be drawn to junk bonds? The answer is simple: they offer very high yields. Indeed, in a typical market, relative to investment-grade bonds, you can expect to pick up anywhere from 2.5 to 5 percentage points in added yield. For example, not long ago, investors were getting 10–12% yields on junk bonds, compared to 7–8% on investment-grade corporates. Obviously, *such yields are available only because of the correspondingly higher exposure to risk*.

However, there's more to bond returns than yield alone: the *returns* you actually end up with don't always correspond to the *yields* you went in with. Junk bonds are subject to a good deal of risk, and their prices are unstable. Indeed, unlike investment-grade bonds, whose prices are closely linked to the behaviour of market interest rates, junk bonds tend to behave more like shares. As a result, the returns are highly unpredictable. Accordingly, only investors who are thoroughly familiar with the risks involved, and who are comfortable with such risk exposure, should use these securities.

Junk bonds in Australia were a small but significant part of the bond market. However in recent years they have all but died out, as is explained in the Investor Facts box to the left.

A Global View of the Bond Market

Globalisation has hit the bond market, just as it has the sharemarket. Foreign bonds have caught on with investors because of their high yields and attractive returns. There are risks with foreign bonds, of course, but high risk of default is *not* necessarily one of them. Instead, the big risk with foreign bonds has to do with the impact that currency fluctuations can have on returns in Australian dollars.

The United States has the world's biggest debt market, accounting for about half of the global market. Following the United States is *Euroland* (principally Germany, Italy and France); close behind is Japan, followed by the United Kingdom and then Canada. Together, these issuers account for more than 90% of the world bond market. Worldwide, various forms of government bonds (e.g. Treasuries, agencies and munis) dominate the market.

Domestic-Pay Versus Foreign-Pay Bonds

There are several ways to invest in foreign bonds (*excluding* foreign bond managed funds, which we'll examine in Chapter 12). From the perspective of an investor, we can divide foreign bonds into two broad categories on the basis of the currency in which the bond is denominated: *domestic-pay* bonds and *foreign-pay* bonds. All the cash flows—including purchase price, maturity value and coupon income—from domestic-pay foreign bonds are in domestic dollars. The cash flows from foreign-pay bonds are designated in a foreign currency.

Domestic-Pay Bonds For US investors, dometic-pay bonds are of two types: Yankee bonds and Eurodollar bonds. *Yankee bonds* are

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

issued by non-US governments or corporations or by so-called supernational agencies, like the World Bank and the InterAmerican Bank. These bonds are issued and traded in the United States; they're registered with the SEC, and all transactions are in US dollars. Not surprisingly, Canadian issuers dominate the Yankee-bond market. Buying a Yankee bond is really no different from buying any other US bond: these bonds are traded on US exchanges and the OTC market, and *because everything is in dollars, there's no currency exchange risk to deal with*. The bonds are generally very high in quality (which is not surprising, given the quality of the issuers) and offer highly competitive yields to investors.

Eurodollar bonds
bonds issued and traded outside the United States that are denominated in US dollars; they are not registered with the SEC, thus restricting sales of new issues.

Eurodollar bonds, in contrast, are issued and traded outside the United States. They are denominated in US dollars, but they are not registered with the SEC, which means that underwriters are legally prohibited from selling *new* issues to the American public. (Only 'seasoned' Eurodollar issues can be sold in the United States.) The Eurodollar market today is dominated by non-US-based investors (though that is changing) and is primarily aimed at institutional investors.

Foreign-Pay Bonds From the standpoint of US investors, foreign-pay international bonds encompass all those issues denominated in a currency other than dollars. These bonds are issued and traded overseas and are not registered with the SEC. Examples are German Government bonds, which are payable in euros; Japanese bonds, issued in yen; and so forth. When American investors speak of *foreign bonds*, it's this segment of the market that most of them are thinking of.

Foreign-pay bonds are subject to changes in currency exchange rates, which can dramatically affect total returns to investors. The returns on foreign-pay bonds are a function of three things: (1) the level of coupon (interest) income earned on the bonds, (2) the change in market interest rates, which determine the level of capital gains (or losses), and (3) the behaviour of currency exchange rates. The first two variables are the same as those that drive all bond returns. They are, of course, just as important to foreign bonds as they are to domestic bonds. Thus, if you're investing overseas, you still want to know what the yields are today and where they're headed. *It's the third variable that separates the return behaviour of domestic-pay from foreign-pay bonds*.

We can assess returns from foreign-pay bonds by employing the same (albeit slightly modified) holding period return formula first introduced in our discussion of foreign share returns. (See Equation 6.6 in Chapter 6.) For example, assume an Australian investor purchased a Swedish Government bond, in large part because of the attractive 7.5% coupon it carried. If the bond was bought at par and market rates fell over the course of the year, the security itself would have provided a return in excess of 7.5% (because the decline in rates would provide some capital gains). However, if the Swedish krona (SEK) fell relative to the dollar, the total return (in Australian dollars) could have actually ended up at a lot less than 7.5%, depending on what happened to the A$/SEK exchange rate. To find out exactly how this investment turned out, you could use Equation 6.6 and make a few (very minor) modifications to it (e.g. use interest income in place of dividends received). Like foreign shares, *foreign-pay bonds can pay off from both the behaviour of the security and the behaviour of the currency*. Knowledgeable investors find these bonds attractive not only because of their competitive returns but also because of *the positive diversification effects they have on bond portfolios*.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

10.9 Briefly describe each of the following types of bonds: (a) *Treasury bonds*, (b) *state bonds*, and (c) *corporate bonds*. Note some of the major advantages and disadvantages of each.

10.10 Briefly define each of the following and note how they might be used by fixed-income investors: (a) *zero-coupon bonds*, (b) *mortgage-backed securities*, and (c) *junk bonds*.

10.11 Describe an *asset-backed security* (ABS) and identify some of the different forms of collateral used with these issues. Briefly note how an ABS differs from an MBS. What is the central idea behind securitisation?

10.12 What's the difference between domestic-pay and foreign-pay bonds? Briefly describe the two major types of foreign bonds. Can currency exchange rates affect the total return of each? Explain.

Convertible Securities

LG 6

convertible bonds fixed-income obligations that have a feature permitting the holder to convert the security into a specified number of shares of the issuing company.

In addition to the many different types of bonds covered in the preceding material, there is still another type of fixed-income security that merits discussion at this point—namely, **convertible bonds**. Issued only by corporations, convertibles are different from most other types of corporate debt, because even though these securities may start out as bonds, they usually end up as shares. That is, while these securities are originally issued as bonds (or even preference shares), they contain a provision that gives investors the option to convert their bonds into shares of the issuing firm. Convertibles are *hybrid securities* because they contain attributes of both debt and equity. But even though they possess the features and performance characteristics of both fixed-income and equity securities, convertibles should be viewed primarily *as a form of equity*. That's because most investors commit their capital to such obligations not for the yields they provide but rather for the potential price performance of the equity side of the issue. In fact, it is always a good idea *to determine whether a corporation has convertible issues outstanding whenever you are considering a share investment*. In some circumstances, the convertible may be a better investment than the firm's ordinary shares. (Preference shares represent another type of *hybrid security* because they too have features and characteristics of both equity and fixed-income securities.)

Convertibles as Investment Outlets

equity kicker another name for the conversion feature, giving the holder of a convertible security a deferred claim on the issuer's ordinary shares.

Convertible securities are popular with investors because of their **equity kicker**—i.e. the right to convert these bonds into shares of the company. Because of this feature, the market price of a convertible has a tendency to behave very much like the price of its underlying shares.

Convertibles are used by all types of companies and are issued either as convertible *bonds* (by far the most common type) or as convertible *preferences shares*. Convertibles *enable firms to raise equity capital at fairly attractive prices*. That is, when a company issues equity in the normal way (by selling more shares in the company), it does so by setting a price on the share that's *slightly below* prevailing market prices. For example, it might be able to get $25 for a share that's currently priced in the market at, say, $27 a share. In contrast, when it issues the equity indirectly through a convertible issue, the company can set a price that's *above* the prevailing market—for example, it might be able to get $35 for the same share. In this case, convertible bond investors will choose to convert their bonds into shares only if the market price of the shares subsequently increases above $35. As a result, the company can raise the *same amount of money* by issuing a lot less equity. Thus, companies issue convertibles *not* as

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

deferred equity
securities issued in one form and later redeemed or converted into shares.

a way of raising debt capital but as a way of raising equity. Because they are eventually converted into shares, convertibles are usually viewed as a form of **deferred equity**.

Convertible bonds and convertible preference shares are both linked to the equity position of the company, so they are usually considered interchangeable for investment purposes. Except for a few peculiarities (e.g. the fact that preference shares pay dividends rather than interest and do so on a quarterly basis rather than half-yearly), convertible bonds and convertible preference shares are evaluated in much the same way. Because of their similarities, the discussion that follows will be couched largely in terms of bonds, but the information and implications apply equally well to preference shares.

Convertible Notes and Bonds Convertible bonds are usually issued as *subordinated debentures* and carry the provision that within a stipulated time period, *the bond may be converted into a certain number of shares of the issuing company.* (Convertibles that are issued as *notes* are just like convertible *bonds* except that the debt portion of the security carries a shorter maturity—usually of five to 10 years. Other than the life of the debt, there is no real difference between the two types of issues: they're both unsecured debt obligations, and they're usually subordinated to other forms of debt.)

Generally speaking, there is little or no cash involved at the time of conversion. You merely trade in the convertible bond (or note) for a stipulated number of shares. For example, assume that a certain convertible security recently came to the market, and it carried the provision that each $1000 note could be converted into shares of the issuing company at $62.55 a share. Thus, *regardless of what happens to the market price of the share,* you can redeem each note for 15.98 shares of the company $1000 ÷ $62.55 = 15.98 shares. So, if the company's shares are trading in the market at, say, $125 a share at the time of conversion, then you would have just converted a $1000 debt obligation into $1997.50 worth of equity (15.98 × $125 = $1997.50). Not surprisingly, this conversion privilege comes at a price: *the low coupon (or dividend) that convertibles usually carry*. That is, when new convertible issues come to the market, their coupons are normally just a fraction of those on comparable straight (non-convertible) bonds. Indeed, the more attractive the conversion feature, the lower the coupon.

Actually, while it's the *bondholder* who has the right to convert the bond at any time, more often than not, the issuing company initiates conversion by calling the bonds—a practice known as **forced conversion**. To provide the corporation with the flexibility to retire the debt and force conversion, most convertibles come out as freely callable issues, or they carry very short call deferment periods. To force conversion, the corporation would call for the retirement of the bond and give the bondholder one of two options: either convert the bond into shares, or redeem it for cash at the stipulated call price (which, in the case of convertibles, contains very little call premium). So long as the convertible is called when the market value of the share exceeds the call price of the bond (which is almost always the case), seasoned investors would never choose the second option. Instead, they would opt to convert the bond, as the company wants them to. Then they can hold the shares if they want to, or they can sell their new shares in the market (and end up with more cash than they would have received by taking the call price). After the conversion is complete, the bonds no longer exist; instead, there are additional shares in their place.

forced conversion
the calling in of convertible bonds by the issuing company.

conversion (or transfer) privilege
the conditions and specific nature of the conversion feature on convertible securities.

Conversion Privilege The key element of any convertible is its **conversion** (or **transfer**) **privilege**, which stipulates the conditions and specific nature of the conversion feature. To begin with, it states exactly when the debenture can be converted. With some issues, there may be an initial waiting period of six months to perhaps two years after the date

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

conversion period
the time period during which a convertible issue can be converted.

of issue, during which time the security cannot be converted. The **conversion period** then begins, and the issue can be converted at any time. The conversion period typically extends for the remaining life of the debenture, but in some instances, it may exist for only a certain number of years. This is done to give the issuing company more control over its capital structure. If the issue has not been converted by the end of its conversion period, it reverts to a straight-debt issue with no conversion privileges.

From the investor's point of view, the most important piece of information is the *conversion price* or the *conversion ratio*. These terms are used interchangeably and specify, either directly or indirectly, the number of shares into which the bond can be converted. The **conversion ratio** denotes the number of ordinary shares into which the bond can be converted. The **conversion price** indicates the stated value per share at which the equity will be delivered to the investor in exchange for the bond. When you stop to think about these two measures, it becomes clear that a given conversion ratio implies a certain conversion price, and vice versa. For example, a $1000 convertible bond might stipulate a conversion ratio of 20, which means that the bond can be converted into 20 shares. This same privilege could also be stated in terms of a conversion price: the $1000 bond may be used to acquire the equity at a 'price' of $50 per share. Here, the conversion price of $50 signifies a conversion ratio of 20. (One basic difference between a convertible debenture and a convertible preference share relates to conversion ratio: the conversion ratio of a debenture generally deals with large multiples of shares, such as 15, 20 or 30 shares. In contrast, the conversion ratio of a preference share is generally very small, often less than one share and seldom more than three or four shares.)

conversion ratio
the number of ordinary shares into which a convertible issue can be converted.

conversion price
the stated price per share at which ordinary shares will be delivered to the investor in exchange for a convertible issue.

The conversion ratio is normally adjusted for stock splits and significant stock dividends. As a result, if a firm declares, say, a 2-for-1 stock split, the conversion ratio of any of its outstanding convertible issues also doubles. And when the conversion ratio includes a fraction, such as 33.5 shares, the conversion privilege specifies how any fractional shares are to be handled. Usually, the investor can either put up the additional funds necessary to purchase another full share at the conversion price or receive the cash equivalent of the fractional share (at the conversion price).

LYONs Start with a *zero-coupon bond*, throw in a *conversion feature* and a *put option*, and you have a **LYON** (the acronym stands for **liquid yield option note**). LYONs are zero-coupon convertible bonds that are convertible, at a fixed conversion ratio, for the life of the issue. Thus, they offer the built-in increase in value over time that accompanies any zero-coupon bond (as it moves towards its par value at maturity), plus full participation in the equity side of the issue via the equity kicker. Unlike most convertibles, there's no current income with a LYON (because it is a zero-coupon bond). On the other hand, however, it does carry an option feature that enables you to 'put' the bonds back to the issuer (at specified values). That is, *the put option gives you the right to redeem your bonds periodically at pre-specified prices*. Thus, you know you can get out of these securities, at set prices, if things move against you.

LYON
liquid yield option note; a zero-coupon bond that carries both a conversion feature and a put option.

Although LYONs may appear to provide the best of all worlds, they do have some negatives. True, LYONs provide downside protection (via the put option feature) and full participation in the equity kicker. But being zero-coupon bonds, they don't generate current income. And you have to watch out for the put option: depending on the type of put option, the payout does not have to be in cash—it can be in shares or bonds/notes. One other thing: because the conversion ratio on the LYON is fixed, while the underlying value of the zero-coupon bond keeps increasing (as it moves to maturity), *the conversion price on the share increases over time*. Thus, the market price

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

of the share had better go up by more than the bond's rate of appreciation or you'll never be able to convert your LYON.

Sources of Value

Because convertibles are fixed-income securities linked to the equity position of the company, they are normally valued in terms of *both the share and the bond dimensions* of the issue. Thus, it is important to both analyse the underlying share *and* formulate interest rate expectations, when considering convertibles as an investment outlet. Let's look first at the share dimension.

Convertible securities trade much like shares whenever the market price of the share starts getting close to (or exceeds) the stated conversion price. Whenever a convertible trades near, or above, its par value ($1000), it will exhibit price behaviour that closely matches that of the underlying share: if the share goes up in price, so does the convertible, and vice versa. In fact, the absolute price change of the convertible will exceed that of the share because of the conversion ratio, which will define the convertible's rate of change in price. For example, if a convertible carries a conversion ratio of, say, 20, then for every point the share goes up (or down) in price, the price of the convertible will move *in the same direction* by roughly that same multiple (in this case, 20). In essence, whenever a convertible trades as a share, its market price will approximate a multiple of the share price, with the size of the multiple being defined by the conversion ratio.

When the market price of the share is well below the conversion price, the convertible loses its tie to the underlying share and begins to trade as a bond. When that happens, the convertible becomes linked to prevailing bond yields, and investors focus their attention on *market rates of interest*. However, because of the equity kicker and their relatively low agency ratings, *convertibles generally do not possess high interest rate sensitivity*. Gaining more than a rough idea of what the prevailing yield of a convertible obligation ought to be is often difficult. For example, if the issue is rated Baa and the market rate for this quality range is 9%, then the convertible should be priced to yield *something around 9%*, plus or minus perhaps half a percentage point. Even more important, however, is the fact that this bond feature sets the *price floor* on the convertible. Price floor is a key component in defining the amount of downside risk embedded in a convertible, since it provides an approximation of the price to which the convertible will drop should the share go into a freefall. That is, the price of the convertible will not fall to much less than its price floor, because at that point the issue's bond value will kick in. (More on this later.)

INVESTOR FACTS

BUSTED CONVERTIBLES—Investors typically choose convertible bonds to take advantage of the upside potential that the equity kicker provides. As a result, convertibles are very popular in rising equity markets, when their prices move more like shares than bonds. What happens when share prices take a nose dive? If the price of the share that underlies the convertible falls to a level well below the bond's conversion price, then the conversion feature becomes totally irrelevant, and you become the proud owner of a 'busted convertible'. Essentially, a busted convertible is an issue that's behaving more like a bond than a share.

Measuring the Value of a Convertible

In order to evaluate the investment merits of convertible securities, you must consider both the bond and the share dimensions of the issue. Fundamental security analysis of the equity position is, of course, especially important in light of the key role that the equity kicker plays in defining the price behaviour of a convertible. In contrast, market yields and agency ratings are used in evaluating the bond side of the issue. But there's more: *in addition to analysing the bond and share dimensions of the issue, it is essential to evaluate the conversion feature itself*. The two critical areas in this regard are conversion value and investment value. These measures have a vital bearing on a convertible's price behaviour and therefore can have a dramatic effect on an issue's holding period return.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

conversion value
an indication of what a convertible issue would trade for if it were priced to sell on the basis of its share value.

Conversion Value In essence, **conversion value** indicates what a convertible issue would trade for if it were priced to sell on the basis of its share value. Conversion value is easy to find:

Equation 10.1

$$\text{Conversion value} = \text{Conversion ratio} \times \text{Current market price of the share}$$

For example, a convertible that carries a conversion ratio of 20 would have a conversion value of $1200 if the company's share traded at a current market price of $60 ($20 \times \$60 = \$1200$).

conversion equivalent (conversion parity)
the price at which the ordinary share would have to sell in order to make the convertible security worth its present market price.

Sometimes analysts use an alternative measure that computes the **conversion equivalent**, also known as **conversion parity**. The conversion equivalent indicates the price at which the share would have to sell in order to make the convertible security worth its present market price. Conversion equivalent is calculated as follows:

Equation 10.2

$$\text{Conversion equivalent} = \frac{\text{Current market price of the convertible bond}}{\text{Conversion ratio}}$$

Thus, if a convertible were trading at $1400 and had a conversion ratio of 20, the conversion equivalent of the share would be $70 ($1400 \div 20 = \$70$). In effect, you would expect the current market price of the share in this example to be at or near $70 in order to support a convertible trading at $1400.

Conversion Premium Unfortunately, convertible issues *seldom* trade precisely at their conversion values. Rather, they usually trade at prices that exceed the bond's underlying conversion value. The extent to which the market price of the convertible exceeds its conversion value is known as the **conversion premium**. The absolute size of an issue's conversion premium is found by taking the difference between the convertible's market price and its conversion value (per Equation 10.1). To place the premium on a relative basis, simply divide the dollar amount of the conversion premium by the issue's conversion value. That is,

conversion premium
the amount by which the market price of a convertible exceeds its conversion value.

Equation 10.3

$$\text{Conversion premium (in \$)} = \text{Current market price of the convertible bond} - \text{Conversion value}$$

where conversion value is found according to Equation 10.1. Then

Equation 10.4

$$\text{Conversion premium (in \%)} = \frac{\text{Conversion premium (in \$)}}{\text{Conversion value}}$$

To illustrate, if a convertible trades at $1400 and its conversion value equals $1200, it has a conversion premium of $200 ($1400 − $1200 = $200). In relation to what the convertible should be trading at, this $200 differential would amount to a conversion premium of 16.7% ($200 ÷ $1200 = 0.167). Conversion premiums are common in the market and can often amount to as much as 30–40% (or more) of an issue's true conversion value.

Investors are willing to pay a premium primarily because of the added current income a convertible provides relative to the underlying share. An investor can recover

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

this premium either through the added current income the convertible provides, or by selling the issue at a premium equal to or greater than that which existed at the time of purchase. Unfortunately, the latter source of recovery is tough to come by, because conversion premiums tend to fade away as the price of the convertible goes up. That means that if you purchase a convertible for its potential price appreciation (which most are), then you must accept the fact that all or a major portion of the price premium is very likely to disappear as the convertible appreciates over time and moves closer to its true conversion value. Thus, if you hope to recover any conversion premium, it will probably have to come from the added current income that the convertible provides.

Payback Period The size of the conversion premium can obviously have a major impact on investor return. When picking convertibles, one of the major questions you should ask is whether the premium is justified. One way to assess conversion premium is to compute the issue's **payback period**, a measure of the length of time it will take to recover the conversion premium from the *extra* interest income earned on the convertible. Because this added income is a principal reason for the conversion premium, it makes sense to use it to assess the premium. The payback period can be found as follows:

payback period
the length of time it takes for the buyer of a convertible to recover the conversion premium from the extra current income earned on the convertible.

Equation 10.5

$$\text{Payback period} = \frac{\text{Conversion premium (in \$)}}{\begin{array}{l}\text{Annual interest} \\ \text{income from the} \\ \text{convertible bond}\end{array} - \begin{array}{l}\text{Annual dividend} \\ \text{income from the} \\ \text{underlying share}\end{array}}$$

In this equation, annual dividends are found by multiplying the share's latest annual dividends by the bond's conversion ratio.

For example, in the foregoing illustration, the bond had a conversion premium of $200. Assume this bond (which carries a conversion ratio of 20) has an 8.5% coupon, and the underlying share paid dividends this past year of 50 cents. Given this information, we can use Equation 10.5 to find the payback period.

$$\text{Payback period} = \frac{\$200}{\$85 - (20 \times \$0.50)}$$
$$= \frac{\$200}{\$85 - (\$10.00)} = \underline{\underline{2.7 \text{ years}}}$$

In essence, you would recover the premium in 2.7 years (a fairly decent payback period).

As a rule, everything else being equal, *the shorter the payback period, the better.* Also, watch out for excessively high premiums (of 50% or more); you may have real difficulty ever recovering such astronomical premiums. Indeed, to avoid such premiums, most experts recommend that you look for convertibles that have payback periods of around five to seven years, *or less*. Be careful when using this measure, however: some convertibles will have *very high payback periods simply because they carry very low coupons* (of 1–2%, or less).

investment value
the price at which a convertible would trade if it were non-convertible and priced at or near the prevailing market yields of comparable non-convertible issues.

Investment Value The price floor of a convertible is defined by its bond properties and is the focus of the investment value measure. It's the point within the valuation process where we focus on current and expected market interest rates. **Investment value** is the price at which the bond would trade if it were non-convertible and if it were priced at or near the prevailing market yields of comparable non-convertible bonds.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

While we'll cover the mechanics of bond pricing in more detail in Chapter 11, suffice it to say at this point that the investment value of a convertible is found by discounting the issue's coupon stream and its par value back to the present, using a discount rate equal to the prevailing yield on comparable non-convertible issues. In other words, using the yields on comparable non-convertible bonds as the discount rate, find the present value of the convertible's coupon stream, add that to the present value of its par value (usually assumed to be $1000), and you have the issue's investment value. In practice, because the convertible's coupon and maturity are known, the only additional piece of information needed is the market yield of comparably rated issues.

For example, if comparable non-convertible bonds were trading at 9% yields, we could use that 9% return as the discount rate in finding the present value (i.e. 'investment value') of a convertible. Thus, if a particular 20-year, $1000 par value convertible bond carried a 6% annual-pay coupon, its investment value (using a 9% discount rate) can be found. The resulting value of the convertible would be about $726. This figure indicates how far the convertible will have to fall before it hits its price floor and begins trading as a straight-debt instrument.

Other things being equal, the greater the distance between the current market price of a convertible and its investment value, the farther the issue can fall in price and, as a result, the greater the downside risk exposure.

CONCEPTS IN REVIEW

Answers available at **www.pearson.com.au/myfinancelab** or **www.pearson.com.au/9781442532885**

10.13 What is a *convertible debenture*? How does a convertible bond differ from a convertible preference share?

10.14 Identify the *equity kicker* of a convertible security and explain how it affects the value and price behaviour of convertibles.

10.15 Explain why it is necessary to examine both the bond and share properties of a convertible debenture when determining its investment appeal.

10.16 What is the difference between *conversion parity* and *conversion value*? How would you describe the payback period on a convertible? What is the *investment value* of a convertible, and what does it reveal?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know	Key Terms
LG 1 Explain the basic investment attributes of bonds and their use as investment vehicles. Bonds are publicly traded debt securities that provide investors with two basic sources of return: (1) current income, and (2) capital gains. Current income is derived from the coupon (interest) payments received over the life of the issue. Capital gains can be earned whenever market interest rates fall. Bonds also can be used to shelter income from taxes and for the preservation and long-term accumulation of capital. The diversification properties of bonds are such that they can greatly enhance portfolio stability.	bonds, *p. 321* yield (or credit) spread, *p. 322*
LG 2 Describe the essential features of a bond, note the role that bond ratings play in the market, and distinguish among different types of call, refunding and sinking-fund provisions. All bonds carry some type of coupon, which specifies the annual rate of interest the issuer will pay. Bonds also have predetermined maturity dates: term bonds carry a single maturity date, and serial bonds have a series of maturity dates. Company issues are rated for bond quality by independent rating agencies. These ratings indicate a bond's potential risk of default: the lower the rating, the higher the risk and the higher the expected return. Australian bonds are not usually issued with call features, although these are common in other markets. Call features spell out whether an issue can be prematurely retired and, if so, when.	bond ratings, *p. 330* call feature, *p. 329* call premium, *p. 329* call price, *p. 329* coupon, *p. 326* current yield, *p. 326* discount bond, *p. 327* income bonds, *p. 330* maturity date, *p. 327* mortgage bonds, *p. 330* premium bond, *p. 327* principal, *p. 327* refunding provisions, *p. 329* serial bond, *p. 327* split ratings, *p. 331* subordinated debentures, *p. 330* term bond, *p. 327*
LG 3 Explain how bonds are priced in the market and why some bonds are more volatile than others. Bonds are priced in the market as a percentage of par and are driven by the issue's coupon and maturity, along with prevailing market yields. When interest rates go down, bond prices go up, and vice versa. The extent to which bond prices move up or down depends on the coupon and maturity of an issue. Bonds with lower coupons and/or longer maturities generate larger price swings.	
LG 4 Identify the different types of bonds and the kinds of investment objectives these securities can fulfil. The bond market is divided into three major segments: Commonwealth Government, state government and private. Treasury bonds are issued by the Australian government and are virtually default-free. State bonds are issued by various state governments, and both financial and industrial companies also issue private or corporate bonds.	asset-backed securities (ABS), *p. 336* corporate bonds, *p. 334* Eurodollar bonds, *p. 338* junk bonds, *p. 336* mortgage-backed bond, *p. 336* PIK-bond, *p. 336*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG5 Discuss the global nature of the bond market and the difference between dollar-denominated and non-dollar-denominated foreign bonds. Foreign bonds, particularly foreign-pay securities, offer highly competitive yields and returns. Foreign-pay bonds cover all issues that are denominated in some currency other than domestic dollars. These bonds have an added source of return: currency exchange rates.	securitisation, *p. 336* state bonds, *p. 334* Treasury bonds, *p. 334* Treasury inflation indexed bonds (TIBS), *p. 334* zero-coupon bonds, *p. 335*
LG6 Describe the basic features and characteristics of convertible securities, and measure the value of a convertible. Convertible securities are initially issued as bonds (or preference shares), but can subsequently be converted into shares. These securities offer investors a stream of fixed income (annual coupon payments), plus an equity kicker (a conversion feature). The value of a convertible is driven by the price behaviour of the underlying share (when the share price is at or above its conversion price), or by market interest rates and the behaviour of bonds (when the share's price is well below its conversion price). The two key values of a convertible are (1) its conversion (share) value, and (2) its investment (bond) value.	conversion equivalent (conversion parity), *p. 343* conversion period, *p. 341* conversion premium, *p. 343* conversion price, *p. 341* conversion privilege, *p. 340* conversion ratio, *p. 341* conversion value, *p. 343* convertible bonds, *p. 339* deferred equity, *p. 340* equity kicker, *p. 339* forced conversion, *p. 340* investment value, *p. 344* LYON (liquid yield option note), *p. 341* payback period, *p. 344*

Discussion Questions

LG5

Q10.1 Identify and briefly describe each of the following types of bonds.

- **a.** Treasury bonds
- **b.** State bonds
- **c.** Zero-coupon bonds
- **d.** Junk bonds
- **e.** Foreign bonds
- **f.** Asset-backed security

What type of investor do you think would be most attracted to each?

LG1 LG4

Q10.2 'Treasury securities are guaranteed by the Australian Government. Therefore, there is no risk in the ownership of such bonds.' Briefly discuss the wisdom (or folly) of this statement.

LG4 LG5

Q10.3 Select the security in the left-hand column that best fits the investor desire described in the right-hand column.

- **a.** Five-year Treasury note
- **b.** Bond with a low coupon and a long maturity
- **c.** Yankee bond
- **d.** Non-callable bond
- **e.** Asset-backed security
- **f.** Junk bond

- **i.** Lock in a high-coupon yield
- **ii.** Accumulate capital over a long period of time
- **iii.** Generate a monthly income
- **iv.** Avoid a lot of price volatility
- **v.** Invest in a foreign bond
- **vi.** Go for the highest yield available
- **vii.** Go for maximum price appreciation

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG6 **Q10.4** Why do companies like to issue convertible securities? What's in it for them?

LG6 **Q10.5** Describe LYONs, and note how they differ from conventional convertible securities. Are there any similarities between LYONs and conventional convertibles? Explain.

LG6 **Q10.6** Using the resources available at your campus or public library or on the Internet, find the information requested below.

a. Select any two *convertible* (notes or bonds) and determine the conversion ratio, conversion parity, conversion value, conversion premium and payback period for each.
b. Select any two *convertible preference shares* and determine the conversion ratio, conversion parity, conversion value, conversion premium and payback period for each.
c. In what way(s) are the two convertible bonds and the two convertible preference shares you selected similar to one another? Are there any differences? Explain.

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG2 **P10.1** A 12%, 20-year bond is currently trading at $1250. What is its current yield?

LG2 **P10.2** Zack buys a 10% corporate bond with a current yield of 6%. How much did he pay for the bond?

LG2 **P10.3** Which of the following three bonds offers the highest current yield?

a. A 9.5%, 20-year bond quoted at 977.50
b. A 16%, 15-year bond quoted at 1646.25
c. A 5.25%, 18-year bond quoted at 540.00

LG2 **P10.4** Assume that you pay $850 for a long-term bond that carries a 7.5% coupon. Over the course of the next 12 months, interest rates drop sharply. As a result, you sell the bond at a price of $962.50.

a. Find the current yield that existed on this bond at the beginning of the year. What was it by the end of the one-year holding period?
b. Determine the holding period return on this investment. (See Chapter 4, Equation 4.4 on page 97, for the HPR formula.)

LG3 **P10.5** Colwyn buys a 10% corporate bond with a current yield of 6%. When he sells the bond one year later, the current yield on the bond is 7%. How much did Col make on this investment?

LG1 **P10.6** In early January 2004, you purchased $30 000 worth of some high-grade corporate bonds. The bonds carried a coupon of 8.1% and mature in 2018. You paid 94.125 when you bought the bonds. Over the five-year period from 2004 through 2008, the bonds were priced in the market as follows:

	Quoted Prices		
Year	Beginning of Year	End of Year	Year-End Bond Yields
2004	941.25	1006.25	8.82%
2005	1006.25	1020.00	8.70
2006	1020.00	1046.25	8.48
2007	1046.25	1102.50	8.05
2008	1102.50	1211.25	7.33

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Coupon payments were made on schedule throughout the five-year period.

a. Find the annual holding period returns for 2004 through 2008. (See Chapter 4, Equation 4.4 on page 97, for the HPR formula.)

b. Use the return information in Table 10.1 to evaluate the investment performance of this bond. How do you think it stacks up against the market? Explain.

LG4 **P10.7** Rhett purchased a 13% zero-coupon bond with a 15-year maturity and a $20 000 par value 15 years ago. The bond matures tomorrow. How much will Rhett receive in total from this investment, assuming all payments are made on these bonds as expected?

LG4 **P10.8** Nate purchased an interest-bearing security last year, planning to hold it until maturity. He received interest payments, and, to his surprise, a sizeable amount of the principal was paid back in the first year. This happened again in year 2. What type of security did Nate purchase?

LG5 **P10.9** Letticia Garcia, an aggressive bond investor, is currently thinking about investing in a foreign (non-dollar-denominated) government bond. In particular, she's looking at a Swiss Government bond that matures in 15 years and carries a 9.5% coupon. The bond has a par value of 10 000 Swiss francs (CHF) and is currently trading at 110 (i.e. at 110% of par).

Letticia plans to hold the bond for a period of one year, at which time she thinks it will be trading at 117.5—she's anticipating a sharp decline in Swiss interest rates, which explains why she expects bond prices to move up. The current exchange rate is CHF1.58/A$, but she expects that to fall to CHF1.25/A$. Use the foreign investment total return formula introduced in Chapter 6 (Equation 6.6 on page 196) to answer the questions below.

a. Ignoring the currency effect, find the bond's total return (in its local currency).

b. Now find the total return on this bond in *Australian dollars*. Did currency exchange rates affect the return in any way? Do you think this bond would make a good investment? Explain.

LG5 **P10.10** Red Electrica España SA (E.REE) is refinancing its bank loans by issuing Eurobonds to investors. You are considering buying $10 000 of these bonds, which will yield 6%. You are also looking at an Australian bond with similar risk that will yield 5%. You expect that interest rates will not change over the course of the next year, after which time you will sell the bonds you purchase.

a. How much will you make on each bond if you buy it, hold it for one year and then sell it for $10 000 (or the Eurodollar equivalent)?

b. Assume the dollar/euro exchange rate goes from 1.11 to 0.98. How much will this currency change affect the proceeds from the Eurobond? (Assume you receive annual interest at the same time you sell the Eurobond.)

LG6 **P10.11** A certain convertible bond has a conversion ratio of 21 and a conversion premium of 20%. The current market price of the underlying share is $40. What is the bond's conversion equivalent?

LG6 **P10.12** You are considering investing $850 in Whichway Corporation. You can buy shares at $25; this share pays no dividends. You can also buy a convertible bond that is currently trading at $850 and has a conversion ratio of 30. It pays $50 per year in interest. Given you expect the price of the share to rise to $35 in one year, which instrument should you purchase?

LG6 **P10.13** A certain 6% annual pay convertible bond (maturing in 20 years) is convertible at the holder's option into 20 shares. The bond is currently trading at $800. The share (which pays 75¢ a share in annual dividends) is currently priced in the market at $35 a share.

a. What is the bond's conversion price?

b. What is its conversion ratio?

c. What is the conversion value of this issue? What is its conversion parity?

d. What is the conversion premium, in dollars and as a percentage?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

e. What is the bond's payback period?
f. If comparably rated non-convertible bonds sell to yield 8%, what is the investment value of the convertible?

LG6 **P10.14** An 8% convertible bond carries a par value of $1000 and a conversion ratio of 20. Assume that an investor has $5000 to invest and that the convertible sells at a price of $1000 (which includes a 25% conversion premium). How much total income (coupon plus capital gains) will this investment offer if, over the course of the next 12 months, the price of the share moves to $75 and the convertible trades at a price that includes a conversion premium of 10%? What is the holding period return on this investment? Finally, given the information in the problem, determine what the underlying share is currently selling for.

LG6 **P10.15** Assume you just paid $1200 for a convertible bond that carries a 7.5% coupon and has 15 years to maturity. The bond can be converted into 24 shares, which are now trading at $50. Find the bond investment value of this issue, given that comparable non-convertible bonds are currently selling to yield 9%.

LG6 **P10.16** Find the conversion value of a *convertible preference share* that carries a conversion ratio of 1.8, given that the market price of the underlying ordinary share is $40. Would there be any conversion premium if the convertible preference share were selling at $90? If so, how much (in dollar and percentage terms)? Also, explain the concept of conversion parity, and then find the conversion parity of this issue, given that the preference share trades at $90.

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets, and other online resources.

Case Problem 10.1 FRANK AND LUCILLE DEVELOP A BOND INVESTMENT PROGRAM

Frank and Lucille Lasnicka, along with their two teenage sons, Lou and Lamar, live in Como, NSW. Frank works as an electronics salesman, and Lucille is a personnel officer at a local bank; together they earn an annual income of around $75 000. Frank has just learned that his recently departed rich uncle has named him in his will to the tune of some $250 000 after taxes. Needless to say, the Lasnickas are elated. Frank intends to spend $50 000 of his inheritance on a number of long-overdue family items (for example, some badly needed remodelling of their kitchen and family room, and the down-payment on a new Porsche Boxster); he wants to invest the remaining $200 000 in various types of fixed-income securities.

Frank and Lucille have no unusual income requirements or health problems. Their only investment objectives are that they want to achieve some capital appreciation, and they want to keep their funds fully invested for a period of at least 20 years. They would rather not have to rely on their investments as a source of current income but want to maintain some liquidity in their portfolio just in case.

QUESTIONS

1. Describe the type of bond investment program you think the Lasnickas should follow. In answering this question, give appropriate consideration to both return and risk factors.
2. List several different types of bonds that you would recommend for their portfolio, and briefly indicate why you would recommend each.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 10.2 THE CASE OF THE MISSING BOND RATINGS

A lot goes into a bond rating, but it is probably safe to say that there is nothing more important in determining a bond's rating than the underlying financial condition and operating results of the company issuing the bond. Generally speaking, a variety of financial ratios are used to assess the financial health of a company, and just as financial ratios can be used in the analysis of shares, they can be used in the analysis of bonds—a process we refer to as *credit analysis*. In credit analysis, attention is directed towards the basic liquidity and profitability of the company, the extent to which the company employs debt, and the ability of the company to service its debt.

The following financial ratios are often helpful in carrying out such analysis: (1) current ratio, (2) quick ratio, (3) net profit margin, (4) return on total capital, (5) long-term debt to total capital, (6) owners' equity ratio, (7) pre-tax interest coverage, and (8) cash flow to total debt. The first two ratios measure the liquidity of the firm, the next two its profitability, the following two the debt load, and the final two the ability of the firm to service its debt load. (For ratio 5, the *lower* the ratio, the better; for all the others, the *higher* the ratio, the better.) The following table lists each of these ratios for six different companies.

A Table of Financial Ratios

(All ratios are real and pertain to real companies)

Financial Ratio	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6
1. Current ratio	1.13 ×	1.39 ×	1.78 ×	1.32 ×	1.03 ×	1.41 ×
2. Quick ratio	0.48 ×	0.84 ×	0.93 ×	0.33 ×	0.50 ×	0.75 ×
3. Net profit margin	4.6%	12.9%	14.5%	2.8%	5.9%	10.0%
4. Return on total capital	15.0%	25.9%	29.4%	11.5%	16.8%	28.4%
5. Long-term debt to total capital	63.3%	52.7%	23.9%	97.0%	88.6%	42.1%
6. Owners' equity ratio	18.6%	18.9%	44.1%	1.5%	5.1%	21.2%
7. Pre-tax interest coverage	2.3 ×	4.5 ×	8.9 ×	1.7 ×	2.4 ×	6.4 ×
8. Cash flow to total debt	34.7%	48.8%	71.2%	20.4%	30.2%	42.7%

Notes: Ratio (2)—Whereas the current ratio relates current assets to current liabilities, the quick ratio considers only the most liquid current assets (cash, short-term securities and accounts receivable) and relates them to current liabilities.
Ratio (4)—Relates pre-tax profit to the total capital structure (long-term debt + equity) of the company.
Ratio (6)—Shows the amount of shareholders' equity used to finance the company (shareholders' equity ÷ total assets).
Ratio (8)—Looks at the amount of corporate cash flow (from net profits + depreciation) relative to the total (current + long-term) debt of the company.
The other four ratios are as described in Chapter 7.

QUESTIONS

1. Three of these companies have bonds that carry investment-grade ratings, and the other three companies carry junk-bond ratings. Judging by the information in the table, which three companies have the investment-grade bonds and which three the junk bonds? Briefly explain your selections.
2. One of these six companies is an AAA-rated firm and one is B-rated. Identify those two companies. Briefly explain your selection.
3. Of the remaining four companies, one carries an AA rating, one carries an A rating and two are BB-rated. Which companies are they?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Excel with Spreadsheets

The cash flow component of bond investments is made up of the annual interest payments and the future redemption value or its par value. Just like other time-value-of-money considerations, the bond cash flows are discounted back in order to determine their present value.

In comparing bonds to shares, many investors look at the respective returns. The total returns in the bond market are made up of both current income and capital gains. Bond investment analysis should include the determination of the current yield as well as a specific holding period return.

On 13 January 2010, you gather the following information on three corporate bonds issued by the General Pineapple Company (GPC). Remember that corporate bonds are quoted as a percentage of their par value. Assume the par value of each bond to be $1000. **Create a spreadsheet** that will model and answer the following three bond investment problems.

Questions

1. Calculate the current yields for these three GPC corporate debentures.

Bonds	Current Yield	Volume	Close
GPC 5.3 13	?	25	105.8
GPC 6.65s 20	?	45	103.0
GPC 7.4 22	?	37	104.7

2. Calculate the holding period returns under the following three scenarios:
   a. Purchased the 5.3 bonds for 990 on 13 January 2009.
   b. Purchased the 6.65s for 988 on 13 January 2009.
   c. Purchased the 7.4 bonds for 985 on 13 January 2007.
3. As of 13 January 2010, GPC shares had a close price of $26.20. The price of GPC shares in January 2007 was $25.25. The share paid a 2007 dividend of $0.46, a 2008 dividend of $0.46 and a 2009 dividend of $0.46.
   a. Calculate the current (13 January 2010) dividend yield for this security.
   b. Assuming you purchased the security in January 2007, what is the holding period return as of January 2009?

Loans are the most common type of regular financing for business and government. Investors have the opportunity to lend to some of the largest companies in the world through the purchase of bonds. Investors also help to finance part of the massive debt incurred by both federal and state governments. Information on bond investing is not so plentiful as the information that can be found on shares. In spite of this relative paucity of information, the Web offers some interesting and useful information on bond investments.

WEBSITE	URL
Australian Securities Exchange	www.asx.com.au
Cannex Australia	www.canstar.au
Fixed Income Specialists	www.fiig.com.au
Reserve Bank of Australia	www.rba.gov.au
Vanguard Investments	www.vanguard.com.au

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER

11

Bond Valuation

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Explain the behaviour of market interest rates and identify the forces that cause interest rates to change.
- LG2 Describe the term structure of interest rates and note how yield curves can be used by investors.
- LG3 Understand how bonds are valued in the marketplace.
- LG4 Describe the various measures of yield and return and explain how these standards of performance are used in bond valuation.
- LG5 Understand the basic concept of duration, how it can be measured, and its use in the management of bond portfolios.
- LG6 Discuss various bond investment strategies and the different ways these securities can be used by investors.

Tabcorp's Bonds

Pure corporate bonds are not regularly issued in Australia. Tabcorp is a rare exception. Other corporations issue debt securities which have bond-like features but are described specifically to reflect their key features (e.g. converting, index-linked, floating rate). The key elements of Tabcorp Bonds are described below.

Tabcorp Bond Offer

The Company successfully raised $284 million from its offer of Tabcorp Bonds pursuant to the Prospectus dated 1 April 2009. Tabcorp Bonds are new five year debt securities listed on the ASX under the code TAHHA. Tabcorp Bonds were issued to successful applicants on 1 May 2009 with an issue price of $100 each. Holders of Tabcorp Bonds are entitled to receive quarterly interest payments and $100 cash per Tabcorp Bond upon redemption in five years. The interest rate will be equal to the three month bank bill rate plus a fixed margin of 4.25% p.a. and will be calculated quarterly. Investors who are allocated at least 100 Tabcorp Bonds and maintain at least their initial allocation for the first year will be entitled to Bonus Interest for the first year of an additional 0.25% p.a. (subject to a cap of 500 Tabcorp Bonds per holding).

In June 2009, the Company raised an additional $150 million of debt pursuant to a note issue to domestic institutional investors. The new issue was in response to enquiries from institutional investors following the Tabcorp Bonds Offer.

(*Source: Tabcorp Concise Annual Report 2009*, Tabcorp Holdings Limited, p. 25.)

In this chapter we will learn about the forces affecting bond issues, values and behaviour as well as investor decisions on bond investment.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Behaviour of Market Interest Rates

LG1 LG2

You will recall from Chapter 4 that rational investors try to earn a return that fully compensates them for risk. In the case of bondholders, that required return (r_i) has three components: the real rate of return (r^*), an expected inflation premium (IP) and a risk premium (RP). Thus, the required return on a bond can be expressed by the following equation:

Equation 11.1

$$r_i = r^* + IP + RP$$

The real rate of return and inflation premium are external economic factors, which *together equal the risk-free rate* (R_F). To find the required return, we need to consider the unique features and properties of the bond issue itself that influence its level of risk. After we do this, we add a risk premium to the risk-free rate to obtain the required rate of return. A bond's risk premium (RP) will take into account key issue and issuer characteristics, including such variables as the type of bond, the issue's term-to-maturity, its call features and bond rating.

Together, the three components in Equation 11.1 (r^*, IP and RP) drive the required return on a bond. Recall in the previous chapter that we identified *five types of risks* to which bonds are exposed. All five of these risks are embedded in a bond's required rate of return. That is, the bond's risk premium (RP) addresses, among other things, the business and financial (credit) risk characteristics of an issue, along with its liquidity and call risks, whereas the risk-free rate (R_F) takes into account interest rate and purchasing power risks.

Viewed from the perspective of the market as a whole, it is *these investor returns in the aggregate* that define *prevailing market interest rates*. Because these interest rates have a significant bearing on bond prices and yields, investors watch them closely. For example, more conservative investors watch interest rates because one of their major objectives is to lock in high yields. Aggressive traders also have a stake in interest rates because their investment programs are often built on the capital gains opportunities that accompany major swings in rates.

Keeping Tabs on Market Interest Rates

Just as there is no single bond market but, instead, a series of different market sectors, so too there is no single interest rate that applies to all segments of the market. Rather, each segment has its own, unique level of interest rates. Granted, the various rates do tend to drift in the same direction over time, but it is also common for **yield** (or **credit**) **spreads** (interest rate differentials) to exist among the various market sectors. Some of the more important market yields and yield spreads are as follows:

yield (or credit) spreads differences in interest rates that exist in various sectors of the market

- Australian state government bonds usually carry low market rates because of their sound credit rating. As a rule, their market yields are about 20% to 30% lower than corporates. Federal government bonds have the lowest yields (because they have the least risk), followed by state agencies and then corporates, which provide the highest returns.
- Issues that normally carry bond ratings generally display the same behaviour: the lower the rating, the higher the yield.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

- There is generally a direct relationship between the coupon that an issue carries and its yield. Discount (low-coupon) bonds yield the least and premium (high-coupon) bonds yield the most.
- As a rule, bonds with long maturities tend to yield more than short issues. However, this rule does not always hold; sometimes, short-term yields equal or exceed the yields on long-term bonds. This is frequently an early signal that a recession is coming.

Remember that bonds in Australia are often termed fixed-income securities displaying all or most of the characteristics discussed in the chapter. See Table 11.1 for some examples of these securities.

As an investor, you should pay close attention to interest rates and yield spreads. Try to stay abreast of both the current state of the market and the *future direction in market rates*. Thus, if you are a conservative (income-oriented) investor and think that rates have just about peaked, that should be a signal to try to lock in the prevailing high yields. In contrast, if you're an aggressive bond trader who thinks rates have peaked (and are about to drop), that should be a clue to buy bonds that offer maximum price appreciation potential (low-coupon bonds that still have a long time before they mature).

But how do you formulate such expectations? Unless you have considerable training in economics, you will probably have to rely on various published sources. Fortunately, a wealth of such information is available. Your broker is an excellent source for such reports, as are investor services like Moody's and Standard & Poor's. Also, of course, there are numerous online sources. Finally, there are widely circulated business and financial publications (e.g. *Smart Investor*, *BRW* and the *Australian Financial Review*) that regularly address the current state and future direction of market interest rates. Predicting the direction of interest rates is not easy. However, by taking the time to read some of these publications and reports regularly and carefully, you can at least get a handle on what experts predict is likely to occur in the near future—over, say, the next six to nine months, perhaps longer.

TABLE 11.1 Fixed-Income Securities

How do the recent fixed-income listings compare?

	Westpac SPS II	AMP Notes	Tabcorp Bond
Yield	BBSW+380	BBSW+475	BBSW+425
Instrument	Stapled convertible preference share	Subordinated note	Senior bond
Ranking	Deeply subordinated	Subordinated	Senior, ranks equally with bank facilities and other debt
Rating	A+/Aa3	A–/A3	BBB+
Credit rating notching	Two notches below Westpac's rating	One notch below AMP's rating	Equal with the issuer's rating
Step-up margin	N/A	150bp	N/A
Conversion	Mandatory conversion into ordinary shares at year 5	N/A, redeemed for cash	N/A, redeemed for cash
Term	Perpetual, unless conversion occurs	Final maturity at year 10, with a step-up at year 5	Final maturity at year 5

(*Source: Smart Investor*, June 2009, p. 68. Courtesy of the *Australian Financial Review*.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What Causes Rates to Move?

Although interest rates are a complex economic issue, we do know that certain forces are especially important in influencing their general behaviour. Serious bond investors should make it a point to become familiar with the major determinants of interest rates and try to monitor those variables, at least informally.

In that regard, perhaps no variable is more important than *inflation*. Changes in the inflation rate, or even expectations about its future course, have a direct and profound effect on market interest rates. Figure 11.1 provides a history of inflation in Australia over the period 1995–2009. As inflation drifts up, so do interest rates. On the other hand, a drop in inflation is matched by a similar decline in interest rates.

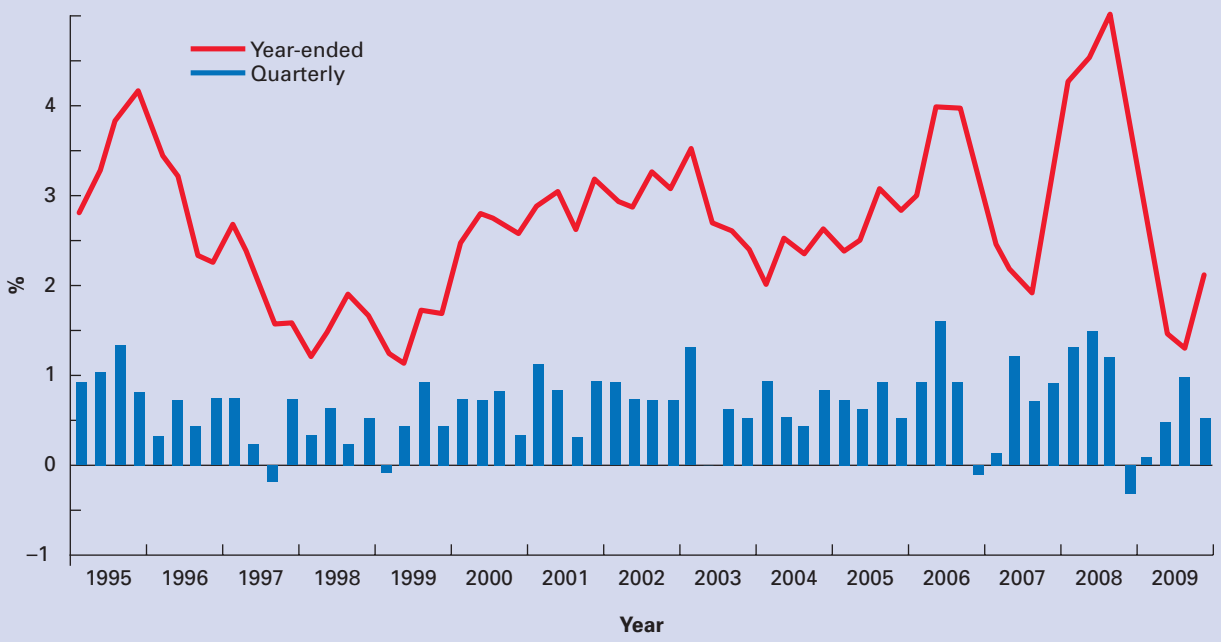
In addition to inflation, five other important economic variables can significantly affect the level of interest rates:

- *Changes in the money supply*. An increase in the money supply pushes rates down (as it makes more funds available for loans), and vice versa. This is true only up to a point, however. If the growth in the money supply becomes excessive, it can lead to inflation, which, of course, means higher interest rates.

INVESTOR FACTS

INFLATION-LINKED BONDS (ILBs)—ILBs are a direct hedge against inflation. ILBs allow investors to achieve a return that is above the consumer price index. For example, as inflation rises, so does the amount of the principal; the interest rate (calculated at the highest, indexed amount) also increases in line with inflation. In 2009 the Australian Government issued ILBs for the first time in six years to help pay for its $67 billion stimulus package.

FIGURE 11.1 Consumer Price Inflation



(*Source: Smart Investor*, May 2010, pp. 6–9. Courtesy of the *Australian Financial Review*.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

- *The size of the federal budget deficit*. When the Australian Government has to borrow large amounts to cover the budget deficit, the increased demand for funds exerts an upward pressure on interest rates. That's why bond market participants become so concerned when the budget deficit gets bigger and bigger—*other things being equal*, that means more upward pressure on market interest rates.
- *The level of economic activity*. Businesses need more capital when the economy expands. This need increases the demand for funds, and rates tend to rise. During a recession, economic activity contracts and rates typically fall.
- *Policies of the Reserve Bank*. Actions of the Reserve Bank (RBA) to control inflation also have a major effect on market interest rates. When it wants to slow actual (or anticipated) inflation, the RBA usually does so by driving up interest rates. Unfortunately, such actions sometimes have the side effect of slowing down business activity as well.
- *The level of interest rates in major foreign markets*. Today, investors look beyond national borders for investment opportunities. Rising rates in major foreign markets put pressure on rates in Australia to rise as well; if rates don't keep pace, foreign investors may be tempted to dump their dollars to buy higher yielding foreign securities.

term structure of interest rates
the relationship between the interest rate or rate of return (yield) on a bond and its time to maturity.

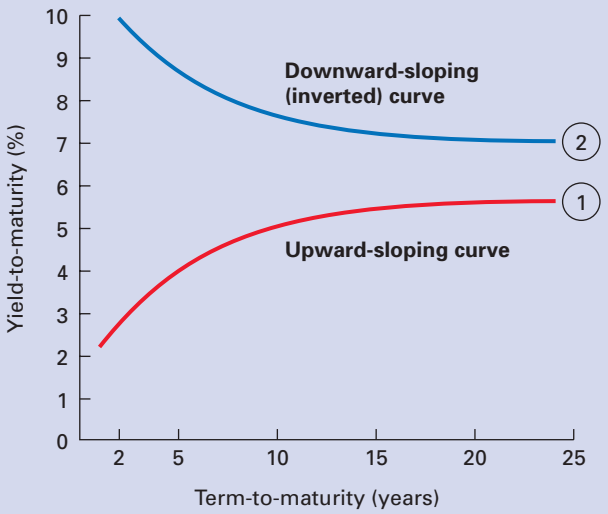
yield curve
A graph that represents the relationship between a bond's term to maturity and its yield a given point of time.

The Term Structure of Interest Rates and Yield Curves

Bonds having different maturities typically have different interest rates. The relationship between interest rates (yield) and time to maturity for any class of similar-risk securities is called the **term structure of interest rates**. This relationship can be depicted graphically by a **yield curve**, which relates a bond's *term* to maturity to its *yield* to maturity at a given point in time (Figure 11.2). The yield curve constantly changes as market forces push bond yields at different maturities up and down.

FIGURE 11.2 Two Types of Yield Curves

A yield curve relates term-to-maturity to yield-to-maturity at a given point in time. Although yield curves come in many shapes and forms, the most common is the *upward-sloping curve*. It shows that investor returns (yields) increase with longer maturities.



Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Types of Yield Curves Two different types of yield curves are illustrated in Figure 11.2. By far the most common type is curve 1, the *upward-sloping* curve. It indicates that yields tend to increase with longer maturities. That's because the longer a bond has to maturity, the greater the potential for price volatility and risk of loss. Investors, therefore, require higher risk premiums to induce them to buy the longer, riskier bonds. Occasionally, the yield curve becomes *inverted*, or downward-sloping, as shown in curve 2, which occurs when short-term rates are higher than long-term rates. This curve generally results from actions by the Reserve Bank to curtail inflation by driving short-term interest rates way up. In addition to these two common yield curves, two other types appear from time to time: the *flat* yield curve, when rates for short- and long-term debt are essentially the same, and the *humped* yield curve, when *intermediate-term* rates are the highest.

Plotting Your Own Curves Yield curves are constructed by plotting the yields for a group of bonds that are similar in all respects but maturity. Treasury securities (notes and bonds) are typically used to construct yield curves. There are several reasons for this: their yields are easily found in financial publications, they have no risk of default, and they are homogeneous with regard to quality and other issue characteristics. Investors can also construct yield curves for other classes of debt securities, such as A-rated state bonds, Aa-rated corporate bonds or even certificates of deposit.

Explanations of the Term Structure of Interest Rates The shape of the yield curve can change over time. Three commonly cited theories—the expectations hypothesis, the liquidity preference theory and the market segmentation theory—explain more fully the reasons for the general shape of the yield curve.

expectations hypothesis
the theory that the shape of the yield curve reflects investor expectations of future interest rates.

Expectations Hypothesis The **expectations hypothesis** suggests that the yield curve reflects investor expectations about the future behaviour of interest rates. This theory argues that the relationship between short-term and long-term interest rates today reflects investors' expectations about how interest rates will change in the future. When the yield curve is upward-sloping, and long-term rates are higher than short-term rates, the expectations hypothesis interprets this as a sign that investors expect short-term rates to rise in the future. That's why long-term rates pay a premium compared to short-term rates. People will not lock their money away in a long-term investment if they think interest rates are going to rise unless the rate on the long-term investment is higher than the current rate on short-term investments.

Liquidity Preference Theory More often than not, yield curves have an upward slope. The expectations hypothesis would interpret this as a sign that investors expect rates to rise more often than not. That seems somewhat illogical. Why would investors expect interest rates to trend up over time? There is certainly no historical pattern to lead one to hold that view. One explanation for the frequency of upward-sloping yield curves is the **liquidity preference theory**. This theory states that, intuitively, long-term bond rates should be higher than short-term rates because of the added risks involved with the longer maturities. In other words, because of the risk differential (real or perceived) between long- and short-term debt securities, rational investors will prefer the less risky, short-term obligations *unless they can be motivated, via higher interest rates, to invest in longer bonds*.

liquidity preference theory
the theory that investors tend to prefer the greater liquidity of short-term securities and therefore require a premium to invest in long-term securities.

Actually, there are a number of reasons why rational investors should prefer short-term securities. To begin with, they are more liquid (more easily converted to cash) and less sensitive to changing market rates, which means there is less price volatility. For a

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

given change in market rates, the prices of longer term bonds will show considerably more movement than the prices of short-term bonds. Simply put, uncertainty increases over time, and investors therefore require a premium to invest in long maturities. In addition, just as investors tend to require a premium for tying up funds for longer periods, borrowers will also pay a premium in order to obtain long-term funds. Borrowers thus assure themselves that funds will be available, and they avoid having to roll over short-term debt at unknown and possibly unfavourable rates. All of these preferences explain why higher rates of interest should be associated with longer maturities and why it's perfectly rational to expect upward-sloping yield curves.

market segmentation theory the theory that the market for debt is segmented on the basis of maturity, that supply and demand within each segment determine the prevailing interest rate, and that the slope of the yield curve depends on the relationship between the prevailing rates in each segment.

Market Segmentation Theory Another often-cited theory, the **market segmentation theory**, suggests that the market for debt is segmented on the basis of the maturity preferences of different types of financial institutions and investors. According to this theory, the yield curve changes as the supply and demand for funds within each maturity segment determine its prevailing interest rate. The equilibrium between the financial institutions that supply the funds for short-term maturities (e.g. banks) and the borrowers of those short-term funds (e.g. businesses with seasonal loan requirements) establishes interest rates in the short-term markets. Similarly, the equilibrium between suppliers and demanders in such long-term markets as life insurance and real estate determines the prevailing long-term interest rates.

The shape of the yield curve can be either upward- or downward-sloping, as determined by the general relationship between rates in each market segment. When supply outstrips demand for short-term loans, short-term rates are relatively low. If, at the same time, the demand for long-term loans is higher than the available supply of funds, then long-term rates will move up. Thus, low rates in the short-term segment and high rates in the long-term segment cause an upward-sloping yield curve, and vice versa.

Which Theory Is Right? It is clear *that all three theories* of the term structure have merit in explaining the shape of the yield curve. From them, we can conclude that at any time, the slope of the yield curve is affected by (1) expectations regarding future interest rates, (2) liquidity preferences, and (3) the supply and demand conditions in the short- and long-term market segments. Upward-sloping yield curves result from expectations of rising interest rates, lender preferences for shorter-maturity loans, and greater supply of short- rather than of long-term loans relative to the respective demand in each market segment. The opposite behaviour, of course, results in a flat or downward-sloping yield curve. At any point in time, the interaction of these forces determines the prevailing slope of the yield curve.

Using the Yield Curve in Investment Decisions Bond investors often use yield curves in making investment decisions. Analysing the changes in yield curves over time provides investors with information about future interest rate movements and how they can affect price behaviour and comparative returns. For example, if the yield curve begins to rise sharply, it usually means that inflation is starting to heat up or is expected to do so in the near future. In that case, investors can expect that interest rates, too, will rise. Under these conditions, most seasoned bond investors will turn to short or intermediate (three to five years) maturities, which provide reasonable returns and at the same time minimise exposure to capital loss when interest rates go up (and bond prices fall). A downward-sloping yield curve, although unusual, generally results from actions of the Reserve Bank to reduce inflation. As suggested by the expectations hypothesis, this would signal that rates have peaked and are about to fall.

Another factor to consider is the difference in yields on different maturities—the 'steepness' of the curve. For example, a steep yield curve is one where long-term rates

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

are *much higher* than short-term rates. This shape is often seen as an indication that long-term rates may be near their peak and are about to fall, thereby narrowing the spread between long and short rates. Steep yield curves are generally viewed as a bullish sign. For aggressive bond investors, they could be the signal to start moving into long-term securities. Flatter yield curves, on the other hand, sharply reduce the incentive for going long-term. As a result, there's not much incentive to go long-term. Under these conditions, investors would be well advised to just stick with the five- to 10-year maturities, which will generate about the same yield as long bonds but without the risks.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

11.1 Is there a single market rate of interest applicable to all segments of the bond market, or are there a series of market yields? Explain and note the investment implications of such a market environment.

11.2 Explain why interest rates are important to both conservative and aggressive bond investors. What causes interest rates to move, and how can you monitor such movements?

11.3 What is the *term structure of interest rates* and how is it related to the *yield curve*? What information is required to plot a yield curve? Describe an upward-sloping yield curve and explain what it has to say about the behaviour of interest rates. Do the same for a flat yield curve.

11.4 How might you, as a bond investor, use information about the term structure of interest rates and yield curves when making investment decisions?

The Pricing of Bonds

LG 3

No matter who the issuer is, or what kind of bond it is, all bonds are priced pretty much the same. That is, all bonds (including *notes* with maturities of more than one year) are priced according to the *present value of their future cash flow streams*. Indeed, once the prevailing or expected market yield is known, the whole process becomes rather mechanical.

Bond prices are driven by market yields. That's because in the marketplace, the *appropriate yield at which the bond should sell is defined first*, and then that yield is used to find the price (or market value) of the bond. As we saw earlier, the appropriate yield on a bond is a function of certain market and economic forces (e.g. the risk-free rate of return and inflation), as well as key issue and issuer characteristics (like years to maturity and the issue's bond rating). Together, these forces combine to form the *required rate of return*, which is the rate of return the investor would like to earn in order to justify an investment in a given fixed-income security. In the bond market, required return is market driven and is generally considered to be the issue's market yield. That is, the required return defines the yield at which the bond should be trading and serves as the *discount rate* in the bond valuation process.

INVESTOR FACTS

PRICES GO UP, PRICES GO DOWN—We all know that when market rates go up, bond prices go down (and vice versa). But bond prices don't move up and down at the same speed, because *they don't move in a straight line*. Rather, the relationship between market yields and bond prices is *convex*, meaning bond prices will rise at an increasing rate when yields fall and decline at a decreasing rate when yields rise. That is, *bond prices go up faster than they go down*. This is known as *positive convexity*. Thus, for a given change in yield, you stand to make more money when prices go up than you'll lose when prices move down!

The Basic Bond Valuation Model

Generally speaking, bond investors receive two distinct types of cash flows: (1) the periodic receipt of coupon income over the life of the bond, and (2) the recovery of principal (or par value) at the end of the bond's life. Thus, in valuing a bond, you're dealing with an *annuity* of coupon payments plus a large *single cash flow*, as represented by the recovery of principal at maturity.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

We can use these cash flows, along with the required rate of return on the investment, in a present-value–based bond valuation model to find the dollar value, or price, of a bond. Using annual compounding, this valuation model can be expressed as follows:

Equation 11.2

$$P_0 = \sum_{t-1}^{n} \frac{I_i}{(1 + i)^t} + \frac{PV_n}{(1 + i)^n}$$

$$= \begin{matrix}\text{Present value of} \\ \text{coupon payments}\end{matrix} + \begin{matrix}\text{Present value of} \\ \text{bond's par value}\end{matrix}$$

where

P_0 = current price (or value) of the bond
I_t = annual interest (coupon) income
PV_n = par value of the bond, at maturity
n = number of years to maturity
i = prevailing market yield, or required return

In this form, we can compute the current value of the bond, or what an investor would be willing to pay for it, given that he or she wants to generate a certain rate of return, as defined by i. Or we can solve for the i in the equation, in which case we'd be looking for the yield embedded in the current market price of the bond.

In the discussion that follows, we will demonstrate the bond valuation process in two ways. First, we'll use *annual compounding*—that is, because of its computational simplicity, we'll assume we are dealing with coupons that are paid once a year. Second, we'll examine bond valuation under conditions of *semi-annual compounding*, which is more like the way most bonds actually pay their coupon.

Annual Compounding

We need the following information to value a bond: (1) the size of the annual coupon payment, (2) the bond's par value, and (3) the number of years remaining to maturity. We then use the prevailing market yield (or an estimate of future market rates) as the discount rate to compute the price of a bond, as follows:

Equation 11.3

$$\text{Bond price} = \begin{matrix}\text{Present value of the annuity} \\ \text{of annual interest income}\end{matrix} + \begin{matrix}\text{Present value of the bond's} \\ \text{par value}\end{matrix}$$

Equation 11.3a

$$BP = \frac{I}{(1 + i)^1} + \frac{I}{(1 + i)^2} + \ldots + \frac{I}{(1 + i)^N} + \frac{\$1000}{(1 + i)^N}$$

where

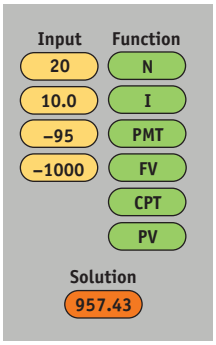
I = amount of annual interest income
N = number of years until the bond matures

To illustrate this bond price formula in action, consider a 20-year, 9.5% bond priced to yield 10%. That is, the bond pays an annual coupon of 9.5% (or $95), has 20 years left to maturity, and should be priced to provide a market yield of 10%. We can now use Equation 11.3 to find the price of our bond.

$$BP = \frac{\$95}{(1 + 0.10)^1} + \frac{\$95}{(1 + 0.10)^2} + \ldots + \frac{\$95}{(1 + 0.10)^{20}} + \frac{\$1000}{(1 + 0.10)^{20}} = \underline{\underline{\$957.43}}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Note that because this is a coupon-bearing bond, we have an annuity of coupon payments of $95 a year for 20 years, plus a single cash flow of $1000 that occurs at the end of year 20. Thus, we find the present value of the coupon annuity and then add that amount to the present value of the recovery of principal at maturity. In this particular case, you should be willing to pay about $958 for this bond, so long as you're satisfied with earning 10% on your money.



CALCULATOR USE For *annual compounding*, to price a 20-year, 9.5% bond to yield 10%, use the keystrokes shown in the margin, where:

N = number of years to maturity
I = yield on the bond (what the bond is being priced to yield)
PMT = stream of annual coupon payments
FV = par value of the bond
PV = computed price of the bond

Semi-Annual Compounding

Although using annual compounding simplifies the valuation process a bit, it's not the way bonds are actually valued in the marketplace. In practice, most (domestic) bonds pay interest every six months, so semi-annual compounding is used in valuing bonds. Fortunately, it's relatively easy to go from annual to semi-annual compounding: all you need to do is cut the annual coupon payment in half and make two minor modifications to the present-value interest factors. Given these changes, finding the price of a bond under conditions of semi-annual compounding is much like pricing a bond using annual compounding. That is:

Equation 11.4

$$\text{Bond price (with semi-annual compounding)} = \text{Present value of an annuity of } \textit{semi-annual} \text{ coupon payments} + \text{Present value of the bond's par value}$$

Equation 11.4a

$$BP = \frac{I/2}{\left(1+\frac{i}{2}\right)^{1}} + \frac{I/2}{\left(1+\frac{i}{2}\right)^{2}} + \ldots + \frac{I/2}{\left(1+\frac{i}{2}\right)^{2N}} + \frac{\$1000}{\left(1+\frac{i}{2}\right)^{2N}}$$

where

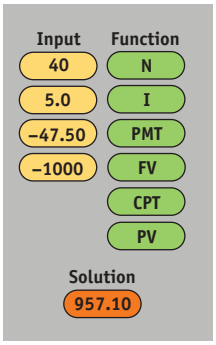
$I/2$ = the amount of interest paid every six months
$i/2$ = the interest rate per six-month period

By simply *cutting the required return in half and doubling the number of periods to maturity*, we are, in effect, dealing with a semi-annual measure of return and using the number of six-month periods to maturity (rather than *years*). For example, in our bond illustration above, we wanted to price a 20-year bond to yield 10%. With semi-annual compounding, we would be dealing with a semi-annual return of 10% ÷ 2 = 5%, and with 20 × 2 = 40 semi-annual periods to maturity.

To see how this all fits together, consider once again the 20-year, 9.5% bond. This time assume it's priced to yield 10% *compounded semi-annually*. Using Equation 11.4, you'd have:

$$BP = \frac{\$9 \div 52}{\left(1+\frac{0.10}{2}\right)^{1}} + \frac{\$95 \div 2}{\left(1+\frac{0.10}{2}\right)^{2}} + \ldots + \frac{\$95 \div 2}{\left(1+\frac{0.10}{2}\right)^{40}} + \frac{4000}{\left(1+\frac{0.10}{2}\right)^{40}} = \underline{\underline{\$957.10}}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e



The price of the bond in this case ($957.10) is slightly less than the price we obtained with annual compounding ($957.43). Clearly, it doesn't make much difference whether we use annual or semi-annual compounding, though the differences do tend to increase a bit with lower coupons and shorter maturities.

CALCULATOR USE For *semi-annual compounding*, to price a 20-year, 9.5% semi-annual-pay bond to yield 10%, use the keystrokes shown in the margin, where:

N = number of six-month periods to maturity (20 × 2 = 40)
I = yield on the bond, adjusted for semi-annual compounding (10% ÷ 2 = 5%)
PMT = stream of semi-annual coupon payments ($95.00 ÷ 2 = $47.50)

and **FV** and **PV** remain the same.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

11.5 Explain how market yield affects the price of a bond. Could you price a bond without knowing its market yield? Explain.

11.6 Why are bonds generally priced using semi-annual compounding? Does it make much difference if you use annual compounding?

Measures of Yield and Return

LG 4

In the bond market, investment decisions are made more on the basis of a bond's yield than its dollar price. Not only does yield affect the price at which a bond trades, but it also serves as an important measure of return. To use yield as a measure of return, we *simply reverse the bond valuation process* described above and solve for yield rather than price. Actually, there are three widely used measures of yield: current yield, yield-to-maturity and yield-to-call. We'll look at all three of them here, along with a concept known as *expected return*, which measures the expected (or actual) rate of return earned over a specific holding period.

Current Yield

current yield
a return measure that indicates the amount of current income that a bond provides relative to its market price.

Current yield is the simplest of all bond return measures, but it also has the most limited application. This measure looks at just one source of return: *a bond's interest income*. In particular, it indicates the amount of current income a bond provides relative to its prevailing market price. It is calculated as follows:

Equation 11.5

$$\text{Current yield} = \frac{\text{Annual interest income}}{\text{Current market price of the bond}}$$

For example, an 8% bond would pay $80 per year in interest for every $1000 of principal. However, if the bond were currently priced at $800, it would have a current yield of 10% ($80 ÷ $800 = 0.10). Current yield is a measure of a bond's annual coupon income, so it would be of interest primarily to investors seeking high levels of current income, such as endowments or retirees.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Yield-to-Maturity

yield-to-maturity (YTM; or promised yield) the fully compounded rate of return earned by an investor over the life of a bond, including interest income and price appreciation.

Yield-to-maturity (YTM) is the most important and most widely used bond valuation measure. It evaluates both interest income and price appreciation and considers total cash flow received over the life of an issue. Also known as **promised yield**, YTM shows the fully compounded rate of return earned by an investor, *given that the bond is held to maturity and all principal and interest payments are made in a prompt and timely fashion*. In addition, because YTM is a present-value–based measure of return, it's assumed that *all the coupons will be reinvested, for the remaining life of the issue, at an interest rate equal to the bond's yield-to-maturity.* This 'reinvestment assumption' plays a vital role in YTM, and will be discussed in more detail later in this chapter (see 'Yield Properties' on page 365).

Yield-to-maturity is used not only to gauge the return on a single issue but also to track the behaviour of the market in general. In other words, market interest rates are basically a reflection of the average promised yields that exist in a given segment of the market. Promised yield provides valuable insight into an issue's investment merits and is used to assess the attractiveness of alternative investment vehicles. Other things being equal, the higher the promised yield of an issue, the more attractive it is.

Although there are a couple of ways to compute promised yield, the best and most accurate procedure is one that is derived directly from the bond valuation model described above. That is, *assuming annual compounding*, you can use Equation 11.3 (on page 361) to measure the YTM on a bond. The difference is that now, instead of trying to determine the price of the bond, *we know its price and are trying to find the discount rate that will equate the present value of the bond's cash flow (coupon and principal payments) to its current market price*. This procedure may sound familiar: it's just like the *internal rate of return* measure described in Chapter 4. Indeed, we're basically looking for the internal rate of return on a bond. When we find that, we have the bond's yield-to-maturity.

Unfortunately, unless you have a hand-held calculator or computer software that will do the calculations for you, finding yield-to-maturity is a matter of trial and error. Let's say we want to find the yield-to-maturity on a 7.5% ($1000 par value) bond that has 15 years remaining to maturity and is currently trading in the market at $809.50. From Equation 11.3, we know that

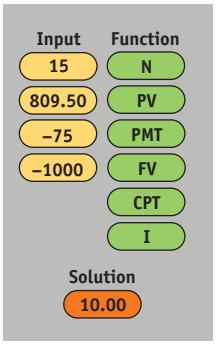
$$BP = \$809.50 = \frac{\$75}{(1+i)^1} + \frac{\$75}{(1+i)^2} + \ \ldots \ + \frac{\$75}{(1+i)^{15}} + \frac{\$1000}{(1+i)^{15}}$$

Notice that this bond sells below par (i.e. it sells at a discount). What do we know about the relationship between the required return on a bond and its coupon rate when the bond sells at a discount? Bonds sell at a discount when the required return (or yield to maturity) is higher than the coupon rate, so the yield to maturity on this bond must be higher than 7.5%.

Through trial and error, we might start with a discount rate of, say, 8% or 9% (or any number above the bond's coupon). Sooner or later, we'll try a discount rate of 10%. And look what happens at that point: using Equation 11.3 to price this bond at a discount rate of 10%, we see that the price equals $809.48.

The computed price of $809.48 is reasonably close to the bond's current market price of $809.50. As a result, the 10% rate represents the yield-to-maturity on this bond. That is, 10% is the discount rate that leads to a *computed bond price that's equal (or very close) to the bond's current market price*. In this case, if you were to pay $809.50 for the bond and hold it to maturity, you would expect to earn a yield of 10.0%.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e



CALCULATOR USE For *annual compounding,* to find the YTM of a 15-year, 7.5% bond that is currently priced in the market at $809.50, use the keystrokes shown in the margin. The present value (**PV**) key represents the current market price of the bond, and all other keystrokes are as defined earlier.

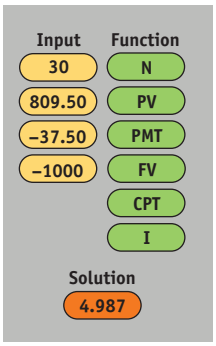
Using Semi-Annual Compounding Given some fairly simple modifications, it's also possible to find yield-to-maturity using semi-annual compounding. To do so, we cut the annual coupon in half, double the number of years (periods) to maturity, and use the bond valuation model in Equation 11.4 (on page 362). Returning to our 7.5%, 15-year bond, let's see what happens when we try a discount rate of 10%.

$$BP = \frac{\$75.00 \div 2}{\left(1 + \frac{0.10}{2}\right)^{1}} + \frac{\$75.00 \div 2}{\left(1 + \frac{0.10}{2}\right)^{2}} + \ldots + \frac{\$75.00 \div 2}{\left(1 + \frac{0.10}{2}\right)^{30}} + \frac{\$1000}{\left(1 + \frac{0.10}{2}\right)^{30}} = \underline{\underline{\$807.85}}$$

As you can see, a semi-annual discount rate of 5% results in a computed bond value that's well short of our target price of $809.50. Given the inverse relationship between price and yield, it follows that if we need a higher price, we'll have to try a lower yield (discount rate). Therefore, we know the semi-annual yield on this bond has to be something less than 5%. By trial and error, you would determine that the yield to maturity on this bond is just a shade under 5% per half year—4.987% to be more precise.

At this point, because we're dealing with semi-annual cash flows, to be technically accurate, we should find the bond's 'effective' annual yield. However, that's not the way it's done in practice. Rather, *market convention is to simply state the annual yield as twice the semi-annual yield.* This practice produces what the market refers to as the **bond-equivalent yield**. Returning to the bond-yield problem above, we know that the issue has a semi-annual yield of 4.987%. According to the bond-equivalent yield convention, we now simply *double the solving rate in order to obtain the annual rate of return on this bond.* Doing this gives us a yield-to-maturity (or promised yield) of 4.987% × 2 = 9.97%. This is the annual rate of return we'll earn on the bond if we hold it to maturity.

bond-equivalent yield
the annual yield on a bond, calculated as twice the semi-annual yield.



CALCULATOR USE For *semi-annual compounding,* to find the YTM of a 15-year, 7.5% semi-annual-pay bond that is currently priced in the market at $809.50, use the keystrokes shown here. As before, the **PV** key is the current market price of the bond, and all other keystrokes are as defined earlier. Remember that to find the bond-equivalent yield, you have to double the computed value of *I*; that is, 4.987% × 2 = 9.974%.

Yield Properties Actually, in addition to holding the bond to maturity, there are several other critical assumptions embedded in any yield-to-maturity figure. The promised yield measure—whether computed with annual or semi-annual compounding—is based on present-value concepts and therefore contains important *reinvestment assumptions*. That is, the yield-to-maturity figure itself is the *minimum required reinvestment rate the investor must subsequently earn on each of the interim coupon receipts* in order to generate a return equal to or greater than the promised yield. In essence, the calculated yield-to-maturity figure is the return 'promised' only so long as the issuer meets all interest and principal obligations on a timely basis and the investor reinvests all coupon income at an average rate equal to or greater than the computed promised yield. In our example above, the investor would have to reinvest (to maturity) each of the coupons received over the next 15 years at a rate of about 10%. *Failure to do so would result in a realised yield of less than the 10% promised.* If the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

investor made no attempt to reinvest the coupons, he or she would earn a realised yield over the 15-year investment horizon of just over 6.5%—far short of the 10% promised return. Thus, unless it's a zero-coupon bond, it should be clear that a significant portion of a bond's total return over time is derived from the *reinvestment of coupons*.

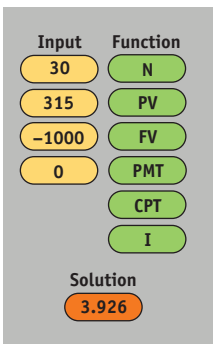
This reinvestment assumption was first introduced in Chapter 4, when we discussed the role that 'interest on interest' plays in measuring investment returns. As noted, when using present-value–based measures of return, such as YTM, there are actually three components of return: (1) coupon/interest income, (2) capital gains (or losses), and (3) interest on interest. Whereas current income and capital gains make up the profits from an investment, interest on interest is a measure of what *you* do with those profits. In the context of yield-to-maturity, the computed YTM defines the required, or minimum, reinvestment rate. Put your investment profits (i.e. coupon income) to work at this rate and you'll earn a rate of return equal to YTM. This rule applies to any coupon-bearing bond—so long as there's an annual or semi-annual flow of coupon income, the reinvestment of that income and interest on interest are matters that you must deal with. Also, keep in mind that the *bigger the coupon* and/or the *longer the maturity*, the *more important the reinvestment assumption*. Indeed, for many long-term, high-coupon bond investments, interest on interest alone can account for *well over half* the cash flow.

Finding the Yield on a Zero We can also use the same promised-yield procedures described above (Equation 11.3 with annual compounding or Equation 11.4 with semi-annual compounding) to find the yield-to-maturity on a zero-coupon bond. The only difference is that the coupon portion of the equation can be ignored because it will, of course, equal zero. All you have to do to find the promised yield on a zero-coupon bond is to solve the following expression:

$$Yield = \left(\frac{\$1000}{\text{Price}}\right)^{\frac{1}{N}} - 1$$

To illustrate, consider a 15-year zero-coupon issue that can be purchased today for $315.

$$Yield = \left(\frac{\$1000}{\$315}\right)^{\frac{1}{15}} - 1 = 0.08 = \underline{\underline{8\%}}$$



The zero-coupon bond pays an annual compound return of 8%. If we were using semi-annual compounding, we'd use the same equation except we'd substitute 30 for 15 (because there are 30 semi-annual periods in 15 years). The yield would change to 3.926% per half year, or 7.845% per year.

Calculator Use For *semi-annual compounding*, to find the YTM of a 15-year zero-coupon bond that is currently priced in the market at $315, use the keystrokes shown in the margin. **PV** is the current market price of the bond, and all other keystrokes are as defined earlier. To find the bond-equivalent yield, double the computed value of *I*; that is, 3.926% × 2 = 7.85%.

Yield-to-Call

Bonds can be either non-callable or callable. Recall from Chapter 10 that a *non-callable bond* prohibits the issuer from calling the bond in for retirement prior to maturity. Because such issues will remain outstanding to maturity, they can be valued by using the standard *yield-to-maturity* measure. In contrast, a *callable bond* gives the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

yield-to-call
the yield on a bond if the issue remains outstanding only until a specified call date.

issuer the right to retire the bond prematurely, so the issue may or may not remain outstanding to maturity. As a result, YTM may not always be the appropriate measure of value. Instead, we must consider the impact of the bond being called away prior to maturity. A common way to do this is to use a measure known as **yield-to-call (YTC)**, which shows the yield on a bond if the issue remains outstanding *not* to maturity, but rather until its first (or some other specified) call date.

Yield-to-call is commonly used with bonds that carry *deferred-call provisions*. Remember that such issues start out as non-callable bonds and then, after a call deferment period (of five to 10 years), become freely callable. Under these conditions, *YTC would measure the expected yield on a deferred-call bond assuming that the issue is retired at the end of the call deferment period* (that is, when the bond first becomes freely callable). We can find YTC by making two simple modifications to the standard YTM equation (Equation 11.3 or 11.4). First, we define the length of the investment horizon (N) as *the number of years to the first call date*, not the number of years to maturity. Second, instead of using the bond's par value ($1000), we *use the bond's call price* (which is stated in the indenture and is nearly always greater than the bond's par value).

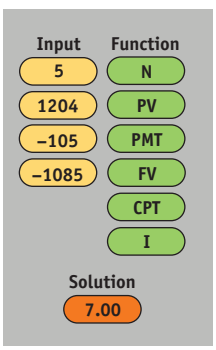
For example, assume you want to find yield-to-call on a 20-year, 10.5% deferred-call bond that is currently trading in the market at $1204, but has five years to go to first call (that is, before it becomes freely callable), at which time it can be called in at a price of $1085. Thus, rather than using the bond's maturity of 20 years in the valuation equation (Equation 11.3 or 11.4), we use the number of years to first call (five years), and rather than the bond's par value, $1000, we use the issue's call price, $1085. Note, however, that we still use the bond's coupon (10.5%) and its current market price ($1204). Thus, for annual compounding, we would have:

Equation 11.6

$$BP = \$1204 = \frac{\$105}{(1+i)^1} + \frac{\$105}{(1+i)^2} + \frac{\$105}{(1+i)^3} + \frac{\$105}{(1+i)^4} + \frac{\$105}{(1+i)^5} + \frac{\$1085}{(1+i)^5}$$

Through trial and error, we finally hit upon a discount rate of 7%. At that point, the present value of the future cash flows (coupons over the next five years, plus call price) will exactly (or very nearly) equal the bond's current market price of $1204.

Thus, *the YTC on this bond is 7%*. In contrast, the bond's YTM is 8.37%. In practice, bond investors normally compute *both* YTM and YTC for deferred-call bonds that are *trading at a premium*. They do this to find which of the two yields is lower; market convention is to *use the lower, more conservative measure of yield (YTM or YTC) as the appropriate indicator of value*. As a result, the premium bond in our example would be valued relative to its yield-to-call. The assumption is that because interest rates have dropped so much (the YTM is 2 percentage points below the coupon rate), it will be called in the first chance the issuer gets. However, the situation is totally different when this or any bond trades at a discount. Why? Because YTM on *any discount bond*, whether callable or not, *will always be less* than YTC. Thus, YTC is a totally irrelevant measure for discount bonds—it's used only with premium bonds.



CALCULATOR USE For *annual compounding*, to find the YTC of a 20-year, 10.5% bond that is currently trading at $1204 but can be called in five years at a call price of $1085, use the keystrokes shown in the margin. In this computation, **N** is the number of years to first call date, and **FV** represents the bond's call price. All other keystrokes are as defined earlier.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Expected Return

Rather than just buying and holding bonds, some investors prefer to actively trade in and out of these securities over fairly short investment horizons. As a result, yield-to-maturity and yield-to-call have relatively little meaning, other than as indicators of the rate of return used to price the bond. These investors obviously need an alternative measure of return that they can use to assess the investment appeal of those bonds they intend to trade in and out of. Such an alternative measure is **expected return**. It indicates the rate of return an investor can expect to earn by holding a bond over a period of time that's less than the life of the issue. (Expected return is also known as **realised yield**, because it shows the return an investor would realise by trading in and out of bonds over short holding periods.)

expected return (realised yield)
the rate of return an investor can expect to earn by holding a bond over a period of time that is less than the life of the issue.

Expected return lacks the precision of yield-to-maturity (and YTC), because the major cash flow variables are largely the product of investor estimates. In particular, going into the investment, both the length of the holding period and the future selling price of the bond are pure estimates and therefore subject to uncertainty. Even so, we can use pretty much the same procedure to find realised yield as we did to find promised yield. That is, with some simple modifications to the standard bond-pricing formula, we can use the following equation to find the expected return on a bond:

Equation 11.7

$$\text{Bond price} = \begin{array}{c}\text{Present value of the bond's} \\ \text{annual interest income} \\ \text{over the holding period}\end{array} + \begin{array}{c}\text{Present value of the bond's} \\ \text{future price at the} \\ \text{end of the holding period}\end{array}$$

Equation 11.7a

$$BP = \frac{I}{(1+i)^1} + \frac{I}{(1+i)^2} + \ \ldots \ + \frac{I}{(1+i)^N} + \frac{FV}{(1+i)^N}$$

where this time N represents the length of the holding period (not years to maturity), and FV is the expected future price of the bond.

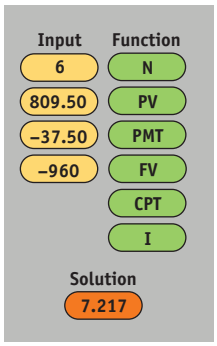
As indicated above, we must determine the *future price* of the bond when computing expected realised yield; this is done by using the standard bond price formula, as described earlier. The most difficult part of deriving a reliable future price is, of course, coming up with future market interest rates that you feel will exist when the bond is sold. By evaluating current and expected market interest rate conditions, *you can estimate a promised yield that the issue is expected to carry at the date of sale and then use that yield to calculate the bond's future price*.

To illustrate, take one more look at our 7.5%, 15-year bond. This time, let's assume that you feel the price of the bond, which is now trading at a discount, will rise sharply as interest rates fall over the next few years. In particular, assume the bond is currently priced at $809.50 (to yield 10%) and you anticipate holding the bond for three years. Over that time, you expect market rates to drop, so the price of the bond should rise to around $960 by the end of the three-year holding period. (Actually, *we found the future price of the bond*—$960—*by assuming interest rates would fall to 8% in year 3*. We then used the standard bond-price formula—in this case Equation 11.3—to find the value of a 7.5%, *12-year obligation*, which is how many years to maturity a 15-year bond will have at the end of a three-year holding period.) Thus, we are assuming that you will buy the bond today at a market price of $809.50 and sell it three years later—after interest rates have declined to 8%—at a price of $960. Given these assumptions, the expected return (realised yield) on this bond is 14.6%, which is the discount rate in the following equation that will produce a current market price of $809.50.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

$$BP = \$809.50 = \frac{\$75}{(1+i)^1} + \frac{\$75}{(1+i)^2} + \frac{\$75}{(1+i)^3} + \frac{\$960}{(1+i)^3} \quad i = 0.146 = \underline{\underline{14.6\%}}$$

The better-than-14.5% return on this investment is fairly substantial, but keep in mind that this is only a measure of *expected return*. It is, of course, subject to variation if things do not turn out as anticipated, particularly with regard to the market yield expected at the end of the holding period. (*Note:* This illustration uses annual compounding, but you could just as easily have used *semi-annual compounding*, which, everything else being the same, would have resulted in an expected yield of 14.4% rather than the 14.6% found with annual compounding. Also, if the anticipated horizon is one year or less, you would want to use the simple *holding period return (HPR)* measure described in Chapter 4.)



CALCULATOR USE For *semi-annual compounding*, to find the expected return on a 7.5% bond that is currently priced in the market at $809.50 but is expected to rise to $960 within a three-year holding period, use the keystrokes shown in the margin. In this computation, **PV** is the current price of the bond and **FV** is the expected price of the bond at the end of the (three-year) holding period. All other keystrokes are as defined earlier. To find the bond-equivalent yield, double the computed value of **I**: 7.217% × 2 = 14.43%.

Valuing a Bond

Depending on investor objectives, investors can determine the value of a bond by either its promised yield or its expected return. Conservative, income-oriented investors employ *promised yield* (YTM or YTC) to value bonds. Coupon income over extended periods of time is their principal objective, and promised yield provides a viable measure of return—assuming, of course, that the reinvestment assumptions embedded in the yield measure are reasonable. More aggressive bond traders, on the other hand, use *expected return* to value bonds. The capital gains that can be earned by buying and selling bonds over relatively short holding periods is their chief concern, and expected return is more important to them than the promised yield at the time the bond is purchased.

INVESTOR FACTS

AUSTRALIAN SHARES VS BONDS—Data on returns and risks with shares and bonds show some differences. The average annual return (30 years, year ending 2009) on Australian shares was 14.9% and on bonds 10.4%; average annual risk on shares was 23.6% and bonds 7.1%. Returns are stated in nominal terms.

In either case, promised or expected yield provides a *measure of return* that can be used to determine the relative attractiveness of fixed-income securities. But to do so, we must evaluate the measure of return in light of the *risk* involved in the investment. Bonds are no different from shares in that the amount of return (promised or expected) should be sufficient to cover the investor's exposure to risk. Thus, the greater the amount of perceived risk, the greater the return the bond should generate. If the bond meets this hurdle, it could then be compared to other potential investments. If you find it difficult to do better in a risk–return sense, then you should seriously consider that bond as a viable investment outlet.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

11.7 What's the difference between *current yield* and *yield-to-maturity*? Between *promised yield* and *realised yield*? How does *YTC* differ from *YTM*?

11.8 Briefly describe the term *bond-equivalent yield*. Is there any difference between promised yield and bond-equivalent yield? Explain.

11.9 Why is the reinvestment of interest income so important to bond investors?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Duration and Immunisation

LG 5

One of the problems with yield-to-maturity (YTM) is that it assumes you can reinvest the bond's periodic coupon payments at the same rate over time. If you reinvest this interest income at a lower rate (or if you spend it), your actual return will be lower than the YTM. Another flaw is that YTM assumes the investor will hold the bond to maturity. For bonds not held to maturity, prices will reflect prevailing interest rates, which are likely to differ from YTM. If rates have moved up since a bond was purchased, the bond will sell at a discount. If interest rates have dropped, it will sell at a premium.

The problem with yield-to-maturity, then, is that it fails to take into account the effects of *reinvestment risk* and *market risk*. To see how reinvestment and price risks behave relative to one another, consider a situation in which market interest rates have undergone a sharp decline. Under such conditions, bond prices will, of course, rise. You might be tempted to cash out your holdings and take some gains (i.e. do a little 'profit taking'). Indeed, selling before maturity is the only way to take advantage of falling interest rates, because a bond will pay its par value at maturity, regardless of prevailing interest rates. That's the good news about falling rates, but there is a downside: when interest rates fall, so do the opportunities to reinvest at high rates. Therefore, although you gain on the price side, you lose on the reinvestment side. Even if you don't sell out, you are faced with increased reinvestment risk. In order to earn the YTM promised on your bonds, you have to reinvest each coupon payment at the same YTM rate. Obviously, as rates fall, you'll find it increasingly difficult to reinvest the stream of coupon payments at or above the YTM rate. When market rates rise, just the opposite happens: the price of the bond falls, but your reinvestment opportunities improve.

Bond investors need a measure that helps them judge just how significant these risks are for a particular bond. Such a yardstick is provided by something called **duration**. It captures in a single measure the extent to which the price of a bond will react to different interest rate environments. Because duration gauges the price volatility of a bond, it gives you a better idea of how likely you are to earn the return (YTM) you expect. That, in turn, will help you tailor your holdings to your expectations of interest rate movements.

duration
a measure of bond price volatility that captures both price and reinvestment risks and which is used to indicate how a bond will react to different interest rate environments.

The Concept of Duration

The concept of duration was first developed in 1938 by actuary Frederick Macaulay to help insurance companies match their cash inflows with payments. When applied to bonds, duration recognises that the amount and frequency of interest payments, the yield-to-maturity and the term-to-maturity all affect the interest rate risk of a particular bond. Term-to-maturity is important because it influences how much a bond's price will rise or fall as interest rates change. In general, when rates move, bonds with longer maturities fluctuate more than shorter issues. On the other hand, while the amount of price risk embedded in a bond is related to the issue's term to maturity, the amount of reinvestment risk is directly related to the size of a bond's coupon: bonds that pay high coupons have greater reinvestment risk simply because there's more to reinvest.

As it turns out, both price and reinvestment risk are related in one way or another to interest rates, and therein lies the conflict. *Any* change in interest rates (whether up or down) will cause price risk and reinvestment risk to push and pull bonds in opposite directions. An increase in rates will produce a drop in price but will lessen reinvestment risk. Declining rates, in contrast, will boost prices but increase reinvestment risk. At some point in time, these two forces should exactly offset each other. *That point in time is a bond's duration.*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

In general, bond duration possesses the following properties:

- Higher *coupons* result in shorter durations.
- Longer *maturities* mean longer durations.
- Higher *yields* (YTMs) lead to shorter durations.

Together, these three variables—coupon, maturity and yield—interact to determine an issue's duration. *Knowing a bond's duration is helpful because it captures the bond's underlying price volatility*. That is, since *a bond's duration and volatility are directly related, it follows that the shorter the duration, the less volatility in bond prices—and vice versa, of course*.

Measuring Duration

Duration is a measure of the average maturity of a fixed-income security. The term *average maturity* may be confusing because bonds have only one final maturity date. An alternative definition of average maturity might be that it captures the average timing of the bond's cash flow. For a zero-coupon bond that makes only one cash payment on the final maturity date, the bond's duration equals its maturity. But because coupon-paying bonds make periodic interest payments, the average timing of these payments (i.e. the average maturity) is different from the actual maturity date. For instance, a 10-year bond that pays a 5% coupon each year distributes a small cash flow in year 1, in year 2 and so on up until the last and largest cash flow in year 10. Duration is a measure that puts some weight on these intermediate payments, so that the 'average maturity' is a little less than 10 years.

You can think of duration as the *weighted-average life of a bond*, where the weights are the fractions of the bond's total value accounted for by each cash payment that the bond makes over its life. Mathematically, we can find the duration of a bond as follows:

Equation 11.8

$$\text{Duration} = \sum_{t-1}^{T}\left[\frac{PV(C_t)}{P_{bond}} \times t\right]$$

where

$PV(C_t)$ = present value of a future coupon or principal payment
P_{bond} = current market price of the bond
t = year in which the cash flow (coupon or principal) payment is received
T = remaining life of the bond, in years

The duration measure obtained from Equation 11.8 is commonly referred to as the *Macaulay duration*—named after the actuary who developed the concept.

Although duration is often computed using semi-annual compounding, Equation 11.8 uses *annual coupons and annual compounding* to keep the ensuing discussion and calculations as simple as possible. Even so, the formula looks more formidable than it really is. If you follow the basic steps noted below, you'll find that duration is not tough to calculate. Here are the steps involved:

Step 1. Find the present value of each annual coupon or principal payment ($PV(C_t)$). *Use the prevailing YTM on the bond as the discount rate*.

Step 2. Divide this present value by the current market price of the bond (P_{bond}). This is the weight, or the fraction of the bond's total value accounted for by each

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

DIFFERENT BONDS, SAME DURATIONS—Sometimes, you really can't judge a book—or a bond, for that matter—by its cover. Here are three bonds that, on the surface, appear to be totally different:

- An eight-year, zero-coupon bond priced to yield 6%.
- A 12-year, 8.5% bond that trades at a yield of 8%.
- An 18-year, 10.5% bond priced to yield 13%.

Although these three bonds have different coupons and different maturities, they have one thing in common: they all have *identical durations* of eight years. Thus, if interest rates went up or down by 50 to 100 basis points, the market prices of these bonds would all behave pretty much the same!

individual payment. Because a bond's value is just the sum of the present values of its cash payments, these weights must sum to 1.0.

Step 3. Multiply this weight by the year in which the cash flow is to be received (t).

Step 4. Repeat steps 1 through 3 for each year in the life of the bond, and then *add up* the values computed in step 3.

Duration for a Single Bond Table 11.2 illustrates the four-step procedure for calculating the duration of a 7.5%, 15-year bond priced at $957 to yield 8%. Table 11.2 provide the basic input data: column (1) shows the year (t) in which each cash payment arrives. Column (2) provides the dollar amount of each cash payment (coupons and principal) made by the bond. Column (3) lists the present value of each cash flow, given an 8% discount rate (which is equal to the prevailing YTM on the bond). For example, in row 1 of Table 11.2, we see that in year 1 the bond makes a $75 coupon payment, and discounting that to the present at 8% reveals that the first coupon payment has a present value of $69.45.

Next (step 2) we divide the present value in column 3 by the current market price of the bond (column 4). If the present value of this bond's first coupon payment is $69.45 and the total price of the bond is $957, then that first payment accounts for 7.26% of the bond's total value ($69.45 ÷ $957 = 0.0726). Therefore, 7.26% is the 'weight' given to the cash payment made in year 1. If you sum the weights in column 4, you will see that they add to 1.0. Multiplying the weights from column 4 by the year (t) in which the cash flow occurs (step 3)

TABLE 11.2 Duration Calculation for a 7.5%, 15-Year Bond Priced to Yield 8%

EXCEL WITH SPREADSHEETS

(1)	(2)	(3)	(4)	(5)
Year (t)	Annual Cash Flow (C_t)	Present Value at 8% of Annual Cash Flows [$PV(C_t)$] (2) × [1 ÷ (1.08)t]	$PV(C_t)$ Divided by Current Market Price of the Bond* (3) ÷ $957	Time-Weighted Relative Cash Flow (1) × (4)
1	$ 75	$69.45	0.0726	0.0726
2	75	64.27	0.0672	0.1343
3	75	59.55	0.0622	0.1867
4	75	55.12	0.0576	0.2304
5	75	51.08	0.0534	0.2668
6	75	47.25	0.0494	0.2962
7	75	43.72	0.0457	0.3198
8	75	40.50	0.0423	0.3386
9	75	37.50	0.0392	0.3527
10	75	34.72	0.0363	0.3628
11	75	32.18	0.0336	0.3698
12	75	29.78	0.0311	0.3734
13	75	27.60	0.0288	0.3749
14	75	25.50	0.0266	0.3730
15	1075	338.62	0.3538	5.3076
				Duration: 9.36 years

*If this bond is priced to yield 8%, it will be quoted in the market at $957.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

results in a time-weighted value for each of the annual cash flow streams (column 5). Adding up all the values in column 5 (step 4) yields the duration of the bond. As you can see, the duration of this bond is a lot less than its maturity—a condition that would exist with any coupon-bearing bond. In addition, keep in mind *that the duration on any bond will change over time* as YTM and term-to-maturity change. For example, the duration on this 7.5%, 15-year bond will fall as the bond nears maturity and/or as the market yield (YTM) on the bond increases.

Duration for a Portfolio of Bonds The concept of duration is not confined to individual bonds only. It can also be applied to whole portfolios of fixed-income securities. The duration of an entire portfolio is fairly easy to calculate. All we need are the durations of the individual securities in the portfolio and their weights (i.e. the proportion that each security contributes to the overall value of the portfolio). Given this, *the duration of a portfolio is the weighted average of the durations of the individual securities in the portfolio*. Actually, this weighted-average approach provides only an *approximate measure of duration*. But it is a reasonably close approximation and, as such, is widely used in practice—so we'll use it, too.

To see how to measure duration using this approach, consider the following five-bond portfolio:

Bond	Amount Invested*	Weight	×	Bond Duration	=	Portfolio Duration
Government bonds	$ 270 000	0.15		6.25		0.9375
Aaa state	180 000	0.10		8.90		0.8900
Aa corporate	450 000	0.25		10.61		2.6525
Utility issues	360 000	0.20		11.03		2.2060
Baa industrial bonds	540 000	0.30		12.55		3.7650
	$1 800 000	1.00				10.4510

*Amount invested = Current market price × Par value of the bonds. That is, if the government bonds are quoted at 90 and the investor holds $300 000 in these bonds, then 0.90 × $300 000 = $270 000.

In this case, the $1.8 million bond portfolio has an *average duration* of approximately 10.5 years.

If you want to change the duration of the portfolio, you can do so by (1) changing the asset mix of the portfolio (shift the weight of the portfolio to longer or shorter duration bonds, as desired) and/or (2) adding new bonds to the portfolio with the desired duration characteristics. As we will see below, this approach is often used in a bond portfolio strategy known as *bond immunisation*.

Bond Duration and Price Volatility

A bond's price volatility is, in part, a function of its term to maturity and, in part, a function of its coupon. Unfortunately, there is no exact relationship between bond maturities and bond price volatilities with respect to interest rate changes. There is, however, a fairly close relationship between bond duration and price volatility—at least, so long as the market doesn't experience wide swings in yield. Duration can be used as a viable predictor of price volatility *only so long as the yield swings are relatively small* (no more than 50 to 100 basis points, or so). That's because whereas duration is a straight-line relationship, the price–yield relationship of a bond is convex in nature. So when bond yields change, bond prices actually move in a curved (convex) manner rather than in a straight line, as depicted by duration.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The mathematical link between bond price and interest rate changes involves the concept of *modified duration*. To find modified duration, we simply take the (Macaulay) duration for a bond (as found from Equation 11.8 on page 371) and adjust it for the bond's yield to maturity.

Equation 11.9

$$\text{Modified duration} = \frac{\text{(Macaulay) duration in years}}{1 + \text{Yield to maturity}}$$

Thus, the modified duration for the 15-year bond discussed above is

$$\text{Modified duration} = \frac{9.36}{1 + 0.08} = \underline{\underline{8.67}}$$

Note that here we use the bond's computed (Macaulay) duration of 9.36 years and the same YTM we used to compute duration in Equation 11.8; in this case, the bond was priced to yield 8%, so we use a yield-to-maturity of 8%.

To determine, in percentage terms, how much the price of this bond would change as market interest rates increased from, say, 8% to 8.5%, we multiply the modified duration value calculated above first by –1 (because of the inverse relationship between bond prices and interest rates) and then by the change in the level of the market interest rates. That is,

Equation 11.10

$$\begin{aligned}\text{Percent change in bond price} &= -1 \times \text{Modified duration} \times \text{Change in interest rates} \\ &= -1 \times 8.67 \times 0.5\% = \underline{\underline{-4.33}}\end{aligned}$$

Thus, a 50-basis-point (or ½ of 1%) increase in market interest rates will lead to an approximately 4.33% drop in the price of this 15-year bond. Such information is useful to bond investors seeking—or trying to avoid—price volatility.

Effective Duration

One problem with the duration measures that we've studied so far is that they do not always work well for bonds with embedded options such as callable bonds. That is, the duration measures we've been using assumes that the bond's future cash flows are paid as originally scheduled through maturity, but that may not be the case with callable bonds (or convertible bonds or bonds with other types of options attached to them). An alternative duration measure that is used for these types of bonds is the effective duration. To calculate effective duration (*ED*), you use Equation 11.11 below:

Equation 11.11

$$ED = \frac{P(i\downarrow) - P(i\uparrow)}{2 \times P \times \Delta r}$$

where

$P(i\uparrow)$ = the new price of the bond if market interest rates go up
$P(i\downarrow)$ = the new price of the bond if market interest rates go down
P = the original price of the bond
Δr = the change in market interest rates

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Suppose you want to know the effective duration of a 25-year bond that pays a 6% coupon semi-annually. The bond is currently priced at $882.72 for a yield of 7%. Now suppose the bond's yield goes up by 0.5% to 7.5%. At that yield the new price would be $831.74 (using a calculator, **N** = 50, **I** = 3.75, **PMT** = 30, and **PV** = 1000). What if the yield drops by 0.5% to 6.5%? In that case, the price rises to $938.62 (**N** = 50, **I** = 3.25, **PMT** = 30, **PV** = 1000). Now we can use Equation 11.11 to calculate the bond's effective duration.

$$\text{Effective duration} = (\$938.62 - \$831.74) \div (2 \times \$882.72 \times 0.005) = \underline{\underline{12.11}}$$

This means that if interest rates rise or fall by a full percentage point, the price of the bond would fall or rise by approximately 12.11%. Note that you can use effective duration in place of modified duration in Equation 11.10, above, to find the percentage change in the price of a bond when interest rates move by more or less than 1.0%. When calculating the effective duration of a callable bond, one modification may be necessary. If the calculated price of the bond when interest rates fall is greater than the bond's call price, then use the call price in the equation rather than $P(i\downarrow)$ and proceed as before.

Uses of Bond Duration Measures

Bond investors have learned to use duration analysis in many ways. For example, as we saw earlier, you can use modified duration or effective duration to measure the potential price volatility of a particular issue. Another equally important use of duration is in the *structuring of bond portfolios*. That is, if you thought that interest rates were about to increase, you could reduce the overall duration of the portfolio by selling higher duration bonds and buying shorter duration bonds. Such a strategy could prove useful, because shorter duration bonds do not decline in value to the same degree as longer duration bonds. On the other hand, if you felt that interest rates were about to decline, the opposite strategy would be appropriate.

Active, short-term investors frequently use duration analysis in their day-to-day operations. Longer term investors also employ it in planning their investment decisions. Indeed, a strategy known as *bond portfolio immunisation* represents one of the most important uses of duration.

Bond Immunisation Some investors hold portfolios of bonds not for the purpose of 'beating the market', but rather to *accumulate a specified level of wealth by the end of a given investment horizon*. For these investors, bond portfolio **immunisation** often proves to be of great value. Immunisation allows you to derive a specified rate of return from bond investments over a given investment interval *regardless of what happens to market interest rates over the course of the holding period*. In essence, you are able to 'immunise' your portfolio from the effects of changes in market interest rates over a given investment horizon.

immunisation
a bond portfolio strategy that uses duration to offset price and reinvestment effects; a bond portfolio is immunised when its average duration equals the investment horizon.

To understand how and why bond portfolio immunisation is possible, you will recall from our earlier discussion that changes in market interest rates will lead to two distinct and opposite changes in bond valuation: the first effect is known as the *price effect;* the second is known as the *reinvestment effect*. The net result of both of these effects working together is that whereas an increase in rates has a negative effect on a bond's price, it has a positive effect on the reinvestment of coupons. Therefore, when interest rate changes do occur, the price and reinvestment effects work against each other from the standpoint of the investor's wealth.

When the average duration of the portfolio just equals the investment horizon,

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

these counteracting effects offset each other and leave the investor's position unchanged. This should not come as much of a surprise, because such a property is already embedded in the duration measure itself. If that relationship applies to a single bond, it should also apply to the *weighted-average duration of a whole bond portfolio*. When such a condition (of offsetting price and reinvestment effects) exists, *a bond portfolio is said to be immunised*. More specifically, your wealth position is immunised from the effects of interest rate changes *when the weighted-average duration of the bond portfolio exactly equals your desired investment horizon*. Table 11.3 provides an example of bond immunisation using a 10-year, 8% coupon bond with a duration of eight years. Here, we assume the investor's desired investment horizon is also eight years in length.

The example in Table 11.3 assumes that you originally purchased the 8% coupon bond at par. It further assumes that market interest rates for bonds of this quality drop from 8% to 6% at the end of the fifth year. Because you had an investment horizon of exactly eight years and desire to lock in an interest rate return of exactly 8%, it follows that you expect to have a terminal value of $1850.90 (i.e. $1000 invested at 8% for eight years = $1000 × $(1.08)^8$ = $1850.90), regardless of interest rate changes in the interim. As can be seen from the results in Table 11.3, the immunisation strategy netted you a total of $1850.31—just 59 cents short of your desired goal. Note that in this case, although reinvestment opportunities declined in years 5, 6 and 7 (when market interest rates dropped to 6%), that same lower rate led to a higher market price for the bond. That higher price, in turn, provided enough capital gains to offset the loss in reinvested income. This remarkable result clearly demonstrates the power of bond immunisation and the versatility of bond duration. And note that even though the table uses a single bond for purposes of illustration, the same results can be obtained from a bond *portfolio* that is maintained at the *proper weighted-average duration*.

Maintaining a fully immunised portfolio (of more than one bond) requires *continual portfolio rebalancing*. Indeed, every time interest rates change, the duration of a portfolio changes. Because effective immunisation requires that the portfolio have a duration value equal in length to the *remaining investment horizon*, the composition

TABLE 11.3 Bond Immunisation EXCEL WITH SPREADSHEETS

Year	Cash Flow from Bond						Terminal Value of Reinvested Cash Flow
1	$80	×	$(1.08)^4$	×	$(1.06)^3$	=	$ 129.63
2	80	×	$(1.08)^3$	×	$(1.06)^3$	=	120.03
3	80	×	$(1.08)^2$	×	$(1.06)^3$	=	111.14
4	80	×	(1.08)	×	$(1.06)^3$	=	102.90
5	80	×	$(1.06)^3$			=	95.28
6	80	×	$(1.06)^2$			=	89.89
7	80	×	(1.06)			=	84.80
8	80					=	80.00
8	$1036.64*						1036.64
			Total				$1850.31
			Investor's required wealth at 8%				$1850.90
			Difference				$ 0.59

*The bond could be sold at a market price of $1036.64, which is the value of an 8% bond with two years to maturity that is priced to yield 6%.

Note: Bond interest coupons are assumed to be paid at year-end. Therefore, there are four years of reinvestment at 8% and three years at 6% for the first year's $80 coupon.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

of the portfolio must be rebalanced each time interest rates change. Further, even in the absence of interest rate changes, a bond's duration declines more slowly than its term to maturity. This, of course, means that the mere passage of time will dictate changes in portfolio composition. Such changes will ensure that the duration of the portfolio continues to match the remaining time in the investment horizon. In summary, portfolio immunisation strategies can be extremely effective, but immunisation is not a passive strategy and is not without potential problems, the most notable of which are associated with portfolio rebalancing.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

11.10 What does the term *duration* mean to bond investors and how does the duration of a bond differ from its maturity? What is *modified duration*, and how is it used? What is *effective duration*, and how does it differ from *modified duration*?

11.11 Describe the process of *bond portfolio immunisation*, and explain why an investor would want to immunise a portfolio. Would you consider portfolio immunisation a passive investment strategy comparable to, say, a buy-and-hold approach? Explain.

Bond Investment Strategies

LG 6

Generally speaking, bond investors tend to follow one of three kinds of investment programs. First, there are those who live off the income: they are conservative, quality-conscious, income-oriented investors who seek to maximise current income. Second, there are the speculators (bond traders): their investment objective is to maximise capital gains, often within a short time span. Finally, there are the serious long-term investors: their objective is to maximise *total return*—from both current income and capital gains—over fairly long holding periods.

In order to achieve the objectives of any of these three programs, you need to adopt a strategy that is compatible with your goals. Professional money managers use a variety of techniques to manage the multimillion (or multibillion)-dollar bond portfolios under their direction. These range from passive approaches, to semi-active strategies, to active, fully managed strategies using interest rate forecasting and yield spread analysis. Most of these strategies are fairly complex and require substantial computer support. Even so, we can look briefly at some of the more basic strategies to gain an appreciation of the different ways in which you can use fixed-income securities to reach different investment objectives.

Passive Strategies

The bond immunisation strategies we discussed earlier are considered to be primarily *passive* in nature. Investors using these tools typically are *not* attempting to beat the market, but to lock in specified rates of return (or terminal values) that they deem acceptable, given the risks involved. As a rule, passive investment strategies are characterised by a lack of input regarding investor expectations of changes in interest rates and/or bond prices. Further, these strategies typically do not generate significant transaction costs. A *buy-and-hold* strategy is perhaps the most passive of all investment strategies: all that is required is that the investor replace bonds that have deteriorating credit ratings, have matured or have been called. Although buy-and-hold investors restrict their ability to earn above-average returns, they also minimise the losses that transaction costs represent.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

bond ladders
an investment strategy wherein equal amounts of money are invested in a series of bonds with staggered maturities.

One popular approach that is a bit more active than buy-and-hold is the use of so-called **bond ladders**. In this strategy, equal amounts are invested in a *series* of bonds with staggered maturities. Here's how a bond ladder works: suppose you want to confine your investing to fixed-income securities with maturities of 10 years or less. Given that maturity constraint, you could set up a ladder by investing (roughly) equal amounts in, say, three-, five-, seven- and 10-year issues. When the three-year issue matures, you would put the money from it (along with any new capital) into a new 10-year note. You would continue this rolling-over process so that eventually you would hold a full ladder of staggered 10-year notes. By rolling into new 10-year issues every two or three years, you can do a kind of dollar-cost averaging and thereby lessen the impact of swings in market rates. The laddered approach is a safe, simple and almost automatic way of investing for the long haul. A key ingredient of this or any other passive strategy is, of course, the use of high-quality investment vehicles that possess attractive features, maturities and yields.

Trading on Forecasted Interest Rate Behaviour

In contrast to passive strategies, a highly risky approach to bond investing is the *forecasted interest rate* approach. Here, the investor seeks attractive capital gains when interest rates are expected to decline and preservation of capital when an increase in interest rates is anticipated. It's risky because it relies on the imperfect forecast of future interest rates. The idea is to increase the return on a bond portfolio by making strategic moves in anticipation of interest rate changes. Such a strategy is essentially *market timing*. An unusual feature of this tactic is that most of the trading is done with *investment-grade securities*, because a high degree of interest rate sensitivity is required to capture the maximum amount of price behaviour.

This strategy rests largely on technical matters. For example, when a decline in rates is anticipated, aggressive bond investors often seek to lengthen the maturity (or duration) of their bonds (or bond portfolios). The reason: longer term bonds rise more in price than shorter term issues. At the same time, investors look for low-coupon and/or moderately discounted bonds, which will add to duration and increase the amount of potential price volatility. These interest swings are usually short-lived, so bond traders try to earn as much as possible in as short a time as possible. When rates start to level off and move up, these investors begin to shift their money out of long, discounted bonds and into high-yielding issues with short maturities. In other words, they do a complete reversal. During those periods when bond prices are dropping, investors are more concerned about preservation of capital, so they take steps to protect their money from capital losses. Thus, they tend to use such short-term obligations as Treasury notes, money funds, short-term (two- to five-year) notes or even variable-rate notes.

INVESTOR FACTS

FORECASTING BOND PRICES— If you can predict the future correctly, you can earn a lot of money. When it comes to bonds, an upgrade or downgrade of the bond issuer will affect the price of the bond, and predicting such a change in the rating can mean substantial profits. No wonder that investors have come up with models to predict such rating changes. Factors like sales growth, future earnings and debt load of the firm are all included in such models.

Bond Swaps

bond swap
an investment strategy wherein an investor liquidates one bond holding and simultaneously buys a different issue in its place.

In a **bond swap**, an investor simultaneously liquidates one position and buys a different issue to take its place. Swaps can be executed to increase current yield or yield-to-maturity, to take advantage of shifts in interest rates, to improve the quality of a portfolio or for tax purposes. Although some swaps are highly sophisticated, most are fairly simple transactions. They go by a variety of colourful names, such as 'profit takeout', 'substitution swap' and 'tax swap', but they are all used for one basic reason: *to seek portfolio improvement*. We will briefly review two types of bond swaps that are fairly simple and hold considerable appeal: the yield pickup swap and the tax swap.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

yield pickup swap
the replacement of a low-coupon bond with a comparable higher coupon bond in order to realise an increase in current yield and yield-to-maturity.

In a **yield pickup swap**, an investor switches out of a low-coupon bond into a comparable higher coupon issue in order to realise an instantaneous pickup of current yield and yield-to-maturity. For example, you would be executing a yield pickup swap if you sold 20-year, A-rated, 6.5% bonds (which were yielding 8% at the time) and replaced them with an equal amount of 20-year, A-rated, 7% bonds that were priced to yield 8.5%. By executing the swap, you would improve your current yield (your coupon income would increase from $65 a year to $70 a year) as well as your yield-to-maturity (from 8% to 8.5%). Such swap opportunities arise because of the *yield spreads* that normally exist between types of bonds. You can execute such swaps simply by watching for swap candidates and/or asking your broker to do so. In fact, the only thing you have to be careful of is that transaction costs do not eat up all the profits.

tax swap
the replacement of a bond that has a capital loss with a similar security; used to offset a gain generated in another part of an investor's portfolio.

Another popular type of swap is the **tax swap**, which is also relatively simple and involves few risks. You can use this technique whenever you have a substantial tax liability as a result of selling some security holdings at a profit. The objective is to execute a swap to *eliminate or substantially reduce* the tax liability accompanying the capital gains. This is done by selling an issue that has undergone a capital *loss* and replacing it with a comparable obligation. For example, assume that you had corporate bonds that you sold resulting in a capital gain of $5000. You can eliminate the tax liability accompanying the capital gain by selling securities that have *capital losses of $5000*. Recall that the treatment of capital gains and losses is subject to specific tax rules which can change over time. Always check tax liabilities on bond trading by referring to tax legislation.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

11.12 Briefly describe a *bond ladder* and note how and why an investor would use this investment strategy. What is a *tax swap* and why would it be used?

11.13 What strategy would you expect an aggressive bond investor (someone who's looking for capital gains) to employ?

11.14 Why is interest sensitivity important to bond speculators? Does the need for interest sensitivity explain why active bond traders tend to use high-grade issues? Explain.

To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Explain the behaviour of market interest rates and identify the forces that cause interest rates to change. The behaviour of interest rates is the single most important force in the bond market. It determines not only the amount of current income an investor will receive but also the investor's capital gains (or losses). Changes in market interest rates can have a dramatic impact on the total returns obtained from bonds over time.

LG 2 Describe the term structure of interest rates and note how yield curves can be used by investors. Many forces drive the behaviour of interest rates over time, including inflation, the cost and availability of funds, and the level of interest rates in major foreign markets. One particularly important force is the term structure of interest rates, which relates yield-to-maturity to term-to-maturity. Yield curves essentially plot the term

Key Terms

yield (or credit) spreads, *p. 354*

expectations hypothesis, *p. 358*
liquidity preference theory, *p. 358*
market segmentation theory, *p. 359*
term structure of interest rates, *p. 357*
yield curve, *p. 357*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
structure and are often used by investors as a way to get a handle on the future behaviour of interest rates.	
LG3 **Understand how bonds are valued in the marketplace.** Bonds are valued (priced) in the marketplace on the basis of their required rates of return (or market yields). The process of pricing a bond begins with the yield it should provide. Once that piece of information is known (or estimated), a standard, present-value–based model is used to find the dollar price of a bond.	
LG4 **Describe the various measures of yield and return and explain how these standards of performance are used in bond valuation.** Four types of yields are important to investors: current yield, promised yield, yield-to-call and expected yield (or return). Promised yield (yield-to-maturity) is the most widely used bond valuation measure. It captures both the current income and the price appreciation of an issue. Yield-to-call, which assumes the bond will be outstanding only until its first (or some other) call date, also captures both current income and price appreciation. The expected return, in contrast, is a valuation measure used by aggressive bond traders to show the total return that can be earned from trading in and out of a bond long before it matures.	bond-equivalent yield, *p. 365* current yield, *p. 363* expected return, *p. 368* promised yield, *p. 364* realised yield, *p. 368* yield-to-call (YTC), *p. 367* yield-to-maturity (YTM), *p. 364*
LG5 **Understand the basic concept of duration, how it can be measured, and its use in the management of bond portfolios.** Bond duration takes into account the effects of both reinvestment and price (or market) risks. It captures, in a single measure, the extent to which the price of a bond will react to different interest rate environments. Equally important, duration can be used to immunise whole bond portfolios from the often devastating forces of changing market interest rates.	duration, *p. 370* immunisation, *p. 375*
LG6 **Discuss various bond investment strategies and the different ways these securities can be used by investors.** Bonds can be used as a source of income, as a way to seek capital gains by speculating on interest rate movement, or as a way to earn long-term returns. Investors often employ one or more of the following strategies: passive strategies such as buy-and-hold, bond ladders and portfolio immunisation; bond trading based on forecasted interest rate behaviour; and bond swaps.	bond ladders, *p. 378* bond swap, *p. 378* tax swap, *p. 379* yield pickup swap, *p. 379*

Discussion Questions

LG1 **Q11.1** Briefly describe each of the following theories of the term structure of interest rates.

a. Expectations hypothesis
b. Liquidity preference theory
c. Market segmentation theory

According to these theories, what conditions would result in a downward-sloping yield curve? What conditions would result in an upward-sloping yield curve? Which theory do *you* think is most valid, and why?

LG2 **Q11.2** Using the RBA website (www.rba.gov.au) or the *Australian Financial Review*, find the bond yields for Treasury securities with the following maturities: three months, six months, one year, three years, five years. Construct a yield curve based on these reported yields, putting term-to-maturity on the horizontal (x) axis and yield-to-maturity on the vertical (y) axis. Briefly discuss the general shape of your yield curve. What conclusions might you draw about future interest rate movements from this yield curve?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG5 **Q11.3** Briefly explain what will happen to a bond's duration measure if each of the following events occur.

a. The yield-to-maturity on the bond falls from 8.5% to 8%.
b. The bond gets one year closer to its maturity.
c. Market interest rates go from 8% to 9%.
d. The bond's *modified* duration falls by half a year.

LG6 **Q11.4** Assume that an investor comes to you looking for advice. She has $200 000 to invest and wants to put it all into bonds.

a. If she considers herself a fairly aggressive investor who is willing to take the risks necessary to generate the big returns, what kind of investment strategy (or strategies) would you suggest? Be specific.
b. What kind of investment strategies would you recommend if your client were a very conservative investor who could not tolerate market losses?
c. What kind of investor do you think is most likely to use:
i. An immunised bond portfolio?
ii. A yield pickup swap?
iii. A bond ladder?
iv. A long-term zero-coupon bond when interest rates fall?

LG4 LG5 **Q11.5** Using the resources available at your campus or public library (or on the Internet), select any six bonds you like, consisting of *two* Treasury bonds, *two* state bonds and *two* corporate bonds. Determine the latest current yield and promised yield for each. (For promised yield, use annual compounding.) In addition, find the duration and modified duration for each bond.

a. Assuming that you put an equal amount of money into each of the six bonds you selected, find the duration for this six-bond portfolio.
b. What would happen to your bond portfolio if market interest rates fell by 100 basis points?
c. Assuming that you have $100 000 to invest, use at least three of these bonds to develop a bond portfolio that emphasises either the potential for capital gains or the preservation of capital. Briefly explain your logic.

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG3 **P11.1** Two bonds have par values of $1000. One is a 5%, 15-year bond priced to yield 8%. The other is a 7.5%, 20-year bond priced to yield 6%. Which of these two has the lower price? (Assume annual compounding in both cases.)

LG3 **P11.2** Using semi-annual compounding, find the prices of the following bonds:

a. A 10.5%, 15-year bond priced to yield 8%
b. A 7%, 10-year bond priced to yield 8%
c. A 12%, 20-year bond priced at 10%

Repeat the problem using annual compounding. Then comment on the differences you found in the prices of the bonds.

LG3 **P11.3** A 15-year bond has an annual-pay coupon of 7.5% and is priced to yield 9%. Calculate the price per $1000 par value.

LG3 **P11.4** A 20-year bond has a coupon of 10% and is priced to yield 8%. Calculate the price per $1000 par value using semi-annual compounding.

LG4 **P11.5** An investor buys a 10% bond for $900 and sells it in one year for $950. What is the investor's holding period return?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG4 **P11.6** A bond is priced in the market at $1150 and has a coupon of 8%. Calculate the bond's current yield.

LG3 **P11.7** An investor is considering the purchase of an 8%, 18-year corporate bond that's being priced to yield 10%. She thinks that in a year, this same bond will be priced in the market to yield 9%. Using annual compounding, find the price of the bond today and in one year. Next, find the holding period return on this investment, assuming that the investor's expectations are borne out. (If necessary, see Chapter 4 for the holding period return formula.)

LG4 **P11.8** A bond is currently selling in the market for $1170.68. It has a coupon of 12% and a 20-year maturity. Using annual compounding, calculate the promised yield on this bond.

LG4 **P11.9** A bond is currently selling in the market for $1098.62. It has a coupon of 9% and a 20-year maturity. Using annual compounding, calculate the promised yield on this bond.

LG4 **P11.10** Compute the current yield of a 10%, 25-year bond that is currently priced in the market at $1200. Use annual compounding to find the promised yield on this bond. Repeat the promised yield calculation, but this time use semi-annual compounding to find yield-to-maturity.

LG4 **P11.11** A 10%, 25-year bond has a par value of $1000 and a call price of $1075. (The bond's first call date is in five years.) Coupon payments are made semi-annually (so use semi-annual compounding where appropriate).

a. Find the current yield, YTM and YTC on this issue, given that it is currently being priced in the market at $1200. Which of these three yields is the highest? Which is the lowest? Which yield would you use to value this bond? Explain.

b. Repeat the three calculations above, given that the bond is being priced at $850. Now which yield is the highest? Which is the lowest? Which yield would you use to value this bond? Explain.

LG4 **P11.12** Assume that an investor is looking at two bonds. Bond A is a 20-year, 9% (semi-annual pay) bond that is priced to yield 10.5%. Bond B is a 20-year, 8% (annual pay) bond that is priced to yield 7.5%. Both bonds carry five-year call deferments and call prices (in five years) of $1050.

a. Which bond has the higher current yield?

b. Which bond has the higher YTM?

c. Which bond has the higher YTC?

LG4 **P11.13** A zero-coupon bond that matures in 15 years is currently selling for $209 per $1000 par value. What is the promised yield on this bond?

LG4 **P11.14** A zero-coupon ($1000 par value) bond that matures in 10 years has a promised yield of 9%. What is the bond's price?

LG4 **P11.15** A 25-year, zero-coupon bond was recently being quoted at 11.625% of par. Find the current yield *and* the promised yield of this issue, given that the bond has a par value of $1000. Using semi-annual compounding, determine how much an investor would have to pay for this bond if it were priced to yield 12%.

LG4 **P11.16** Assume that an investor pays $800 for a long-term bond that carries an 8% coupon. In three years, he hopes to sell the issue for $950. If his expectations come true, what realised yield will this investor earn? (Use annual compounding.) What would the holding period return be if he were able to sell the bond (at $950) after only nine months?

LG4 **P11.17** Using annual compounding, find the yield-to-maturity for each of the following bonds.

a. A 9.5%, 20-year bond priced at $957.43

b. A 16%, 15-year bond priced at $1684.76

c. A 5.5%, 18-year bond priced at $510.65

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Now assume that each of the above three bonds is callable as follows: bond **a** is callable in seven years at a call price of $1095; bond **b** is callable in five years at $1250; and bond **c** is callable in three years at $1050. Use annual compounding to find the yield-to-call for each bond.

LG5 **P11.18** A bond has a Macaulay duration equal to 9.5 and a yield to maturity of 7.5%. What is the modified duration of this bond?

LG5 **P11.19** A bond has a Macaulay duration of 8.62 and is priced to yield 8%. If interest rates go up so that the yield goes to 8.5%, what will be the percentage change in the price of the bond? Now, if the yield on this bond goes down to 7.5%, what will be the bond's percentage change in price? Comment on your findings.

LG5 **P11.20** An investor wants to find the duration of a 25-year, 6% semi-annual-pay, non-callable bond that's currently priced in the market at $882.72, to yield 7%. Using a 50-basis-point change in yield, find the effective duration of this bond. (*Hint:* Use Equation 11.11.)

LG5 **P11.21** Find the Macaulay duration and the modified duration of a 20-year, 10% corporate bond priced to yield 8%. According to the modified duration of this bond, how much of a price change would this bond incur if market yields rose to 9%? Using annual compounding, calculate the price of this bond in one year if rates do rise to 9%. How does this price change compare to that predicted by the modified duration? Explain the difference.

LG5 **P11.22** Which *one* of the following bonds would you select if you thought market interest rates were going to fall by 50 basis points over the next six months?

a. A bond with a Macaulay duration of 8.46 years that's currently being priced to yield 7.5%
b. A bond with a Macaulay duration of 9.30 years that's priced to yield 10%
c. A bond with a Macaulay duration of 8.75 years that's priced to yield 5.75%

LG5 LG6 **P11.23** Stacy is an aggressive bond trader who likes to speculate on interest rate swings. Market interest rates are currently at 9%, but she expects them to fall to 7% within a year. As a result, Stacy is thinking about buying either a 25-year, zero-coupon bond or a 20-year, 7.5% bond. (Both bonds have $1000 par values and carry the same agency rating.) Assuming that Stacy wants to maximise capital gains, which of the two issues should she select? What if she wants to maximise the total return (interest income and capital gains) from her investment? Why did one issue provide better capital gains than the other? Based on the duration of each bond, which one should be more price volatile?

LG5 LG6 **P11.24** Elliot is a 35-year-old bank executive who has just inherited a large sum of money. Having spent several years in the bank's investments department, he's well aware of the concept of duration and decides to apply it to his bond portfolio. In particular, Elliot intends to use $1 million of his inheritance to purchase three bonds:

a. An 8.5%, 13-year bond that's priced at $1045 to yield 7.47%
b. A 7.875%, 15-year bond that's priced at $1020 to yield 7.60%
c. A 24-year, 7.5% bond that's priced at $955 to yield 7.90%

Find the duration and the modified duration of each bond.

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 11.1 THE BOND INVESTMENT DECISIONS OF DAVE AND MARY CARTER

LG3 LG4 LG6 Dave and Mary Carter have a successful dental practice. They have built up a sizeable investment portfolio and have always had a major portion of their investments in fixed-income securities. They adhere to a fairly aggressive investment posture and actively go after both attractive current income and substantial capital gains. Assume that it is now 2010 and Mary is currently evaluating two investment decisions: one involves an addition to their portfolio, the other a revision to it.

The Carters' first investment decision involves a short-term trading opportunity. In particular, Mary has a chance to buy a 7.5%, 25-year bond that is currently priced at $852 to yield 9%; she feels that in two years the promised yield of the issue should drop to 8%.

The second is a bond swap. The Carters hold some Beta Corporation 7%, 2023 bonds that are currently priced at $785. They want to improve both current income and yield-to-maturity, and are considering one of three issues as a possible swap candidate: (a) Floss Ltd, 7.5%, 2035, currently priced at $780, (b) Canal Products, 6.5%, 2023, selling at $885, and (c) City Insurance, 8%, 2024, priced at $950. All of the swap candidates are of comparable quality and have comparable issue characteristics.

QUESTIONS

1. Regarding the short-term trading opportunity:
   a. What basic trading principle is involved in this situation?
   b. If Mary's expectations are correct, what will the price of this bond be in two years?
   c. What is the expected return on this investment?
   d. Should this investment be made? Why?
2. Regarding the bond swap opportunity:
   a. Compute the current yield and the promised yield (use semi-annual compounding) for the bond the Carters currently hold and for each of the three swap candidates.
   b. Do any of the three swap candidates provide better current income and/or current yield than the Beta Corporation bonds the Carters now hold? If so, which one(s)?
   c. Do you see any reason why Mary should switch from her present bond holding into one of the other three issues? If so, which swap candidate would be the best choice? Why?

Case Problem 11.2 GRACE DECIDES TO IMMUNISE HER PORTFOLIO

LG4 LG5 LG6 Grace is the owner of an extremely successful dress boutique. Although high fashion is Grace's first love, she's also interested in investments, particularly bonds and other fixed-income securities. She actively manages her own investments and over time has built up a substantial portfolio of securities. She's well versed on the latest investment techniques and is not afraid to apply those procedures to her own investments.

Grace has been playing with the idea of trying to immunise a big chunk of her bond portfolio. She'd like to cash out this part of her portfolio in seven years and use the proceeds to buy a vacation home. To do this, she intends to use the $200 000 she now has invested in the following four corporate bonds (she currently has $50 000 invested in each one).

a. A 12-year, 7.5% bond that's currently priced at $895

b. A 10-year, zero-coupon bond priced at $405

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

c. A 10-year, 10% bond priced at $1080

d. A 15-year, 9.25% bond priced at $980
(*Note:* These are all non-callable, investment-grade, non-convertible/straight bonds.)

QUESTIONS

1. Given the information provided, find the current yield and the promised yield for each bond in the portfolio. (Use annual compounding.)
2. Calculate the Macaulay and modified durations of each bond in the portfolio and indicate how the price of each bond would change if interest rates were to rise by 75 basis points. How would the price change if interest rates were to fall by 75 basis points?
3. Find the duration of the current four-bond portfolio. Given the seven-year target that Grace has, would you consider this to be an immunised portfolio? Explain.
4. How could you lengthen or shorten the duration of this portfolio? What's the shortest portfolio duration you can achieve? What's the longest?
5. Using one or more of the four bonds described above, is it possible to come up with a $200 000 bond portfolio that will exhibit the duration characteristics Grace is looking for? Explain.
6. Using one or more of the four bonds, put together a $200 000 immunised portfolio for Grace. Because this portfolio will now be immunised, will Grace be able to treat it as a buy-and-hold portfolio—one she can put away and forget about? Explain.

Excel with Spreadsheets

All bonds are priced according to the present value of their future cash flow streams. The key components of bond valuation are par value, coupon interest rate, term-to-maturity and market yield. It is market yield that drives bond prices. In the market for bonds, the appropriate yield at which the bond should sell is determined first, and then that yield is used to find the market value of the bond. The market yield can also be referred to as the required rate of return. It implies that this is the rate of return that a rational investor requires before he or she will invest in a given fixed-income security.

Create a spreadsheet to model and answer the following bond valuation questions.

Questions

1. One of the bond issues outstanding by H&W Ltd has an annual-pay coupon of 5.625% plus a par value of $1000 at maturity. This bond has a remaining maturity of 23 years. The required rate of return on securities of similar-risk grade is 6.76%. What is the value of this corporate bond today?
2. What is the current yield for the H&W bond?
3. In the case of the H&W bond issue from question **1,** if the coupon interest payment is compounded on a semi-annual basis, what would be the value of this security today?
4. How would the price of the H&W bond react to changing market interest rates? To find out, determine how the price of the issue reacts to changes in the bond's yield-to-maturity (YTM). Find the value of the security when the YTM is (a) 5.625%, (b) 8.0%, and (c) 4.5%. Label your findings as being a premium, par or discount bond; comment on your findings.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

5. The Jay & Austin Company has a bond issue with the following characteristics: par of $1000, a semi-annual-pay coupon of 6.5%, remaining maturity of 22 years, and a current price of $878.74. What is the bond's yield-to-maturity (YTM)?

When the word *investment* is mentioned, most investors immediately think of ordinary shares. This response isn't surprising, given the daily publicity that these assets receive. Many investors are surprised to learn that there are many bonds and fixed-income securities available. The limited attention given to bonds is one reason why the Web doesn't generate as many sites dedicated to bonds as can be found for shares. These sites contain descriptive information about interest rates securities issued in Australia, and how to invest in them.

WEBSITE	URL
Australian Bureau of Statistics	www.abs.gov.au
Australian Financial Markets Association	www.afma.com.au
Australian Securities Exchange	www.asx.com.au
Morningstar	www.morningstar.com.au
Reserve Bank of Australia	www.rba.gov.au
Yahoo!7 Finance	http://au.finance.yahoo.com

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CFA EXAM QUESTIONS

INVESTING IN FIXED-INCOME SECURITIES

Following is a sample of 10 Level 1 CFA exam questions that deal with many of the topics covered in Chapters 10 and 11 of this text, including bond prices and yields, interest rates and risks, bond price volatility and bond redemption provisions. (When answering the questions, give yourself 1½ minutes for each question; the objective is to correctly answer seven of the 10 questions in a period of 15 minutes.)

1. Sinking funds are *most likely* to:
   a. reduce credit risk (default risk)
   b. never allow issuers to retire more than the sinking fund requirement
   c. always reduce the outstanding balance of the bond issue to zero prior to maturity

2. An analyst stated that a callable bond has less reinvestment risk and more price appreciation potential than an otherwise identical option-free bond. The analyst's statement *most likely* is:
   a. incorrect with respect to both reinvestment risk and price appreciation potential
   b. incorrect with respect to reinvestment risk, but correct with respect to price appreciation potential
   c. correct with respect to reinvestment risk, but incorrect with respect to price appreciation potential

3. A bond portfolio manager gathered the following information about a bond issue:

Par value	$10 000 000
Current market value	$9 850 000
Duration	4.8

   If yields are expected to decline by 75 basis points, which of the following would provide the *most* appropriate estimate of the price change for the bond issue?
   a. 3.6% of $9 850 000
   b. 3.6% of $10 000 000
   c. 4.8% of $9 850 000

4. A US Treasury note with exactly four years to maturity *most likely* can be broken into as many as:
   a. four Treasury STRIPS
   b. eight Treasury STRIPS
   c. nine Treasury STRIPS

5. Frieda Wannamaker is a taxable investor who is currently in the 28% income-tax bracket. She is considering purchasing a tax-exempt bond with a yield of 3.75%. The taxable equivalent yield on this bond is *closest* to:
   a. 1.46%
   b. 5.21%
   c. 7.47%

6. The present value of a $1000 par value, zero-coupon bond with a three-year maturity assuming an annual discount rate of 6 percent compounded semi-annually is *closest* to:
   a. $837.48
   b. $839.62
   c. $943.40

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

7. A bond with 14 years to maturity and a coupon rate of 6.375 percent has a yield-to-maturity (YTM) of 4.5 percent. Assuming the bond's YTM remains constant, the bond's value as it approaches maturity will *most likely*:
   a. increase
   b. decrease
   c. remain constant

8. A coupon-bearing bond purchased when issued at par value was held until maturity during which time interest rates rose. The ex-post realised return of the bond investment *most likely* was:
   a. above the YTM at the time of issue
   b. below the YTM at the time of issue
   c. equal to the YTM at the time of issue because the bond was held until maturity

9. An analyst accurately calculates that the price of an option-free bond with a 9 percent coupon would experience a 12 percent change if market yields increase 100 basis points. If market yields decrease 100 basis points, the bond's price would *most likely*.
   a. increase by 12%
   b. increase by less than 12%
   c. increase by more than 12%

10. A bond with a par value of $1000 has a duration of 6.2. If the yield on the bond is expected to change from 8.80 percent to 8.95 percent, the estimated new price for the bond following the expected change in yield is *best* described as being:
   a. 0.93% lower than the bond's current price
   b. 1.70% lower than the bond's current price
   c. 10.57% lower than the bond's current price

(*Source:* From Professional Exam Review. *CFA Candidate Study Notes, Level 1,* Volume 4, 2E. © 2009 Delmar Learning, a part of Cengage Learning, Inc. Reproduced by permission. <www.cengage. com/permissions>.)

Answers: 1. a; 2. a; 3. a; 4. c; 5. b; 6. a; 7. b; 8. a; 9. c; 10. a.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

PART FIVE

Portfolio Management

12 **Managed Funds: Professionally Managed Portfolios**

13 **Managing Your Own Portfolio**

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER 12

Managed Funds: Professionally Managed Portfolios

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Describe the basic features of managed funds and note what they have to offer as investment vehicles.
- LG2 Distinguish between unlisted and listed managed funds and discuss the various types of fund fees and charges.
- LG3 Discuss the types of funds available and the variety of investment objectives these funds seek to fulfil.
- LG4 Identify and discuss the investor services offered by managed funds and how these services can fit into an investment program.
- LG5 Gain an appreciation of the investor uses of managed funds, along with the variables that one should consider when assessing and selecting funds for investment purposes.
- LG6 Identify the sources of return and calculate the rate of return earned on an investment in a managed fund.

The Growth in Managed Funds

More Australians than ever are handing over their savings to the expertise of professional investment fund managers. Some of these funds have achieved spectacular returns. For example, the Naos Small Companies Fund was up more than 30% in the year to 30 September 2010, while the Baker Steel Gold Fund delivered a blazing 60% return. Unfortunately, however, most funds don't perform this well, with many funds providing returns less than the average return of the market(s) in which they invest. Despite this disparity of returns, total funds under management has grown from $760 billion in June 2004 to $1.2 trillion in June 2009, an increase of almost 60% in five years. Most of this growth is from the stellar 94% increase in superannuation assets. Increases in public unit trusts (55%) and cash management trusts (35%) were also important contributors to the growth in total funds under management.

As you will see in this chapter, investing in managed funds can be a good way for individual investors to accomplish objectives that they couldn't achieve otherwise. From index funds that reflect the movement of the ASX 200, to emerging markets funds that buy shares in remote areas of the world, the managed fund industry is an increasingly important factor in the investor's toolbox.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Managed Fund Phenomenon

LG 1 LG 2

Questions of which share or bond to select, and when to buy and when to sell, have plagued investors for as long as there have been organised capital markets. Such concerns lie at the very heart of the managed fund concept and in large part explain the growth that managed funds have experienced. Many investors lack the time, know-how or commitment to manage their own portfolios, so they turn to professional fund managers and simply let them decide which securities to buy and when to sell. More often than not, when investors look for professional help, they look to managed funds.

managed fund
an investment trust that invests its unitholders' money in a diversified portfolio of securities (or other assets).

Basically, a **managed fund** is a type of financial services organisation that receives money from its investors (known as *unitholders*) and then invests those funds on their behalf in a diversified portfolio of securities (or other assets). In an abstract sense, a managed fund can be thought of as the *financial product* sold to the public by an investment company. That is, the investment company builds and manages a portfolio of securities and sells ownership interests—units—in that portfolio through a vehicle known as a managed fund.

Recall from Chapter 5 that portfolio management deals with both asset allocation and security selection decisions. By investing in managed funds, investors delegate some, if not all, of the *security selection decisions* to professional managers. As a result, they can concentrate on key asset allocation decisions—which, of course, play a vital role in determining long-term portfolio returns. Indeed, it is for this reason that *many investors consider managed funds to be the ultimate asset allocation vehicle*. For with managed funds, all investors have to do is decide where they want to invest—in large-cap shares, for example, or in technology shares, high-yield bonds, the ASX 200 Index or international securities—and then let the professional managers do the rest—that is, decide which securities to buy and sell, and when.

Managed funds have been a part of the investment landscape for many years. The first one was started in the US city of Boston in 1924 and is still in business today. Assets under management in US funds (known there as 'mutual funds') grew from about US$135 billion in 1980 to over US$9.6 trillion in 2008. Indeed, by 2008 *there were more than 8000 publicly traded mutual funds* in the United States. Worldwide, more than 68 000 managed funds, in one form or another, manage more than US$21 trillion in assets.

Australia is a big player in the managed funds industry and continues to enjoy substantial growth in its investment funds assets. At the end of 2009, assets under management in Australian funds, including superannuation funds, totalled A$1.2 trillion, almost double the A$634 billion being managed in 2002. The global significance of Australia's investment fund assets pool is set out in Figure 12.1. Remarkably, Australia has the largest pool of investment fund assets in the Asia-Pacific region and has the fourth largest pool of funds worldwide.

An Overview of Managed Funds

Managed fund investors come from all walks of life and all income levels. They range from highly inexperienced to highly experienced investors who all share a common view: each has decided, for one reason or another, to turn over at least a part of his or her investment management activities to professionals.

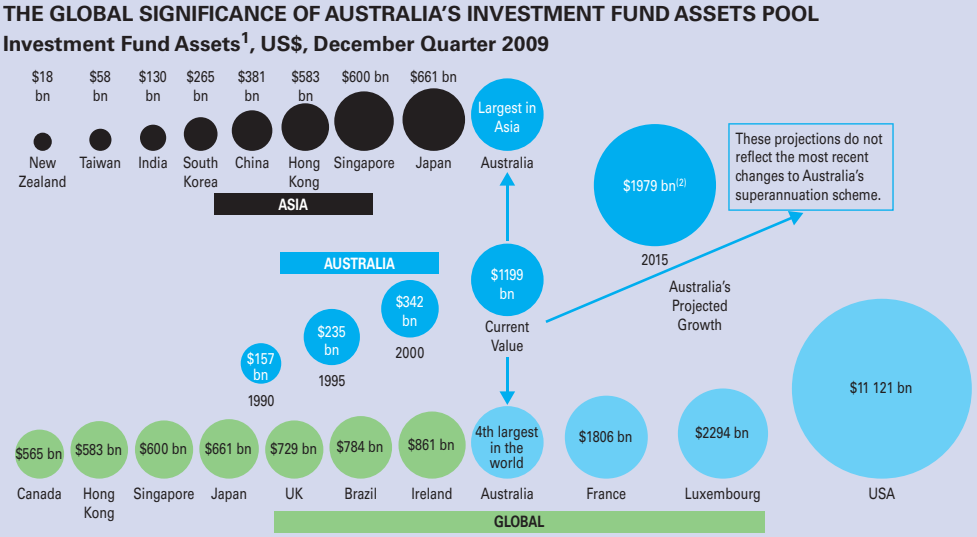
Pooled Diversification An investment in a managed fund really represents an ownership position in a professionally managed portfolio of securities. When you buy shares (known as units) in a managed fund (commonly known as a trust fund, because the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 12.1

The Global Significance of Australia's Investment Fund Assets Pool

(*Source:* Australian Trade Commission 2010, *Investment Management Industry in Australia,* June. © 2010 Australian Trade Commission.)



Note: Circles are not to scale. Data between countries is not strictly comparable.

1. Refers to home-domiciled funds, except Hong Kong, South Korea and New Zealand, which include home- and foreign-domiciled funds. Fund of funds are not included. In this statistical release 'investment fund' refers to a publicly offered, open-end fund investing in transferable securities and money market funds. It is equivalent to 'mutual fund' in the US and 'UCITS' (Undertakings for the Collective Investment of Transferable Securities) in the European Fund and Asset Management Association's statistics on the European investment fund industry.
2. Standard & Poor's Investment Consulting have assumed: A$1 = US$0.80.

Sources: Investment Company Institute, Worldwide Mutual Fund Assets and Flows, December Quarter 2008; Hong Kong's data, December 2008, sourced from Securities and Futures Commission, Fund Management Activities Survey 2008; Singapore's data sourced from the Monetary Authority of Singapore, 2008 Singapore Asset Management Industry Survey; the projected figures of Australia's investment fund assets were provided by Standard & Poor's Investment Consulting: Austrade

money in the fund is held in trust for the benefit of the unitholders), you become a part owner of a portfolio of securities. That's because a managed fund combines the investment capital of many people who have similar investment goals and invests the funds for those individuals in a wide variety of securities.

Investors in managed funds are able to enjoy much wider investment diversification than they could otherwise achieve. To appreciate the extent of such diversification, take a look at Figure 12.2. It provides a summary list of the securities held in the portfolio of a major managed fund. Clearly, this is far more diversification than most investors are likely to achieve. Yet each investor who owns units in this fund is, in effect, a part owner of this diversified portfolio of securities.

Of course, not all funds are as big or as widely diversified as the one depicted in Figure 12.2. But whatever the size of the fund, as the securities held by it move up and down in price, the market value of the managed fund units moves accordingly. And when dividend and interest payments are received by the fund, they too are passed on to the unitholders and distributed on the basis of prorated ownership. For example, if you own 1000 units in a managed fund and that represents 1% of all units outstanding, you will receive 1% of the distributions made by the fund. When a security held by the fund is sold for a profit, the capital gain is also passed on to fund unitholders. The whole managed fund idea, in fact, rests on the concept of **pooled diversification**, which works very much like health insurance, whereby individuals pool their resources for the collective benefit of all the contributors.

pooled diversification
a process whereby investors buy into a diversified portfolio of securities for the collective benefit of the individual investors.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 12.2

Example of a Summary List of Portfolio Holdings

This list represents a summary of the holdings of the Perpetual Concentrated Equity Fund, as at 31 January 2011.

Portfolio Sectors/Percentage of Holding	Top 10 Shareholdings
Energy, 10.4%	BHP Billiton Limited
Materials, 25.6%	Commonwealth Bank of Australia
Industrials, 0.6%	Westpac Banking Corporation
Consumer discretionary products, 9.9%	Coal and Allied Industries Limited
Consumer staples, 9.7%	Foster's Group Limited
Financials (excluding property), 32.9%	ANZ Banking Group Limited
Telecommunications, 3.3%	Orica Limited
Other shares, 1.4%	Rio Tinto Limited
Cash and fixed interest, 6.1%	Telstra Corporation Limited
	New Hope Corporation Limited

(*Source:* Perpetual Concentrated Equity Fund, January 2011. Copyright © Perpetual Limited 2010.)

Attractions and Drawbacks of Managed Fund Ownership The attractions of managed fund ownership are numerous. One of the most important is *diversification*; it benefits managed fund unitholders by spreading out holdings over a wide variety of industries and companies, thus reducing the risk inherent in any one investment. Another appeal of managed funds is *full-time professional management*, which relieves investors of many day-to-day management and record-keeping chores. What's more, the fund may be able to offer better investment talents than individual investors can provide. Still another advantage is that most managed fund investments can be started with *a modest capital outlay*. Sometimes no minimum investment is required, and after the initial investment has been made, additional units can usually be purchased in small amounts. The *services that managed funds offer* can also make them appealing to many investors. These can include automatic reinvestment and withdrawal plans. Finally, managed funds offer *convenience*. They are relatively easy to acquire; the funds handle the paperwork and record-keeping; their unit prices are widely quoted; and it is possible to deal in fractional units.

management fee
a fee levied annually for professional managed fund services provided, and paid regardless of the performance of the portfolio.

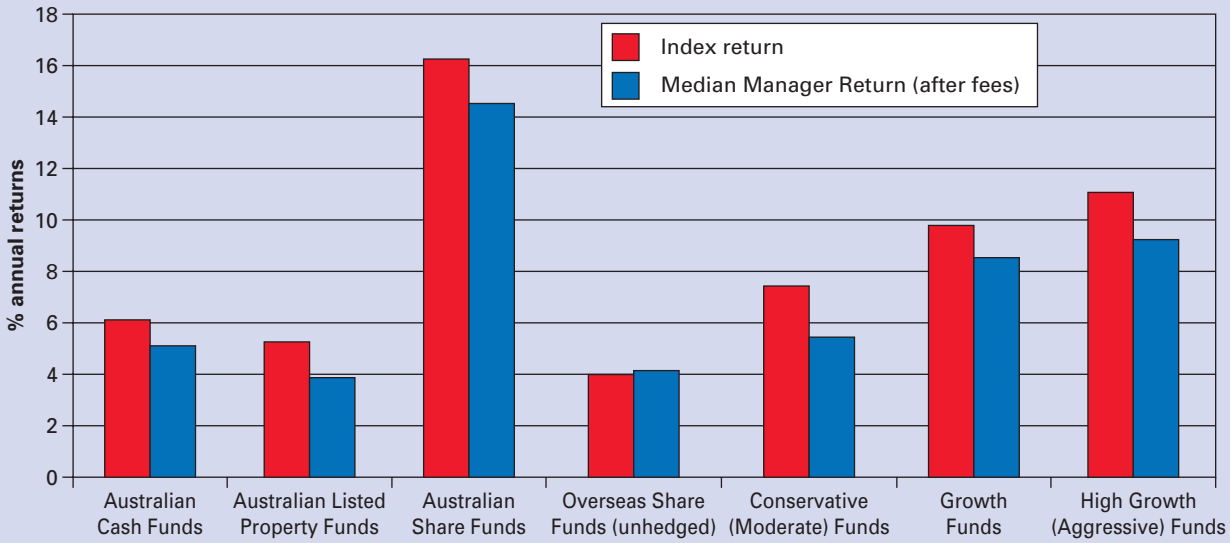
There are, of course, some major drawbacks to managed fund ownership. One of the biggest disadvantages is that managed funds in general *can be costly* and involve substantial transaction costs. Many funds carry sizeable commission charges when entering and/or exiting the fund. In addition, a **management fee** is levied annually for the professional services provided, and it is deducted right off the top, regardless of whether the fund has had a good or a bad year. And, even in spite of all the professional management and advice, it seems that *managed fund performance net of fees* over the long haul tends to underperform the market as a whole. Figure 12.3 shows the median manager performance for seven different groups of actively managed funds for the five-year period to 30 June 2008. Their results have been compared to the performance of a relevant index, being the average rate of return produced by that investment sector. The message is clear: *consistently beating the market is no easy task*, even for professional investment managers. Although a handful of funds have given investors above-average and even spectacular rates of return, most managed funds simply don't meet those levels of performance. This isn't to say that the long-term returns from managed funds are substandard or that they fail to equal what you could achieve by putting your money in, say, a savings account or some other risk-free investment outlet. Quite the contrary: the long-term returns from managed funds have been substantial (and perhaps even better than those that many individual investors could have achieved on their own), but most of these returns can be traced to strong market conditions and/or to the reinvestment of dividends and capital gains.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 12.3

Median Manager Performance versus Index, Five Years to 30 June 2008

Even with the services of professional money managers, it is hard for managed funds to outperform the market given the high costs of funds management.



Past performance is not an indication of future performance.
Source 1: Vanguard using Mercer survey data. Net of fee performance.
Fund/Index used
Australian Cash Funds: UBS Australian Bank Bill Index
Australian Listed Property Funds: S&P/ASX300 A-REIT Accumulation Index
Australian Share Funds: S&P/ASX300 Accumulation Index
Overseas Share Funds (Unhedged): MSCI World ex-Australia Index in $A
Conservative (Moderate) Funds: Diversified Bmk
Growth Funds: Diversified Bmk
High Growth (Aggressive) Funds: Diversified Bmk

(*Source:* Vanguard Investments 2009, 'Managed Funds' (brochure), using Mercer Survey data. © Vanguard Investments Australia.)

Note: The returns shown do not relate to any of Vanguard's products. Index returns do not take into account fees or costs. Assumes reinvestment of all distributions. The comparison would be different if alternative indices were chosen or if the survey of managers considered different funds.)

How Managed Funds are Organised and Run Although it is tempting to think of a managed fund as a single large entity, that view isn't really accurate. Various functions—investing, record-keeping, safekeeping and others—are often split among two or more companies. To begin with, there is the fund itself, which is organised as a separate trust and is owned by the unitholders, not by the company that runs it. In addition, there are several other main players:

- The *management company* runs the fund's daily operations. Management companies are those we know as AMP, AXA, MLC, Prudential, Zurich, etc.; they are the ones that create the funds in the first place. They sell fund units, either directly to the public or through authorised dealers (like major brokerage houses and banks). When you request a prospectus and sales literature, you deal with the management company. Usually, the management company also serves as investment manager.
- The *investment manager* buys and sells shares or bonds and otherwise oversees the portfolio. Usually, three parties participate in this phase of the operation:

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

(1) the *portfolio manager*, who actually runs the portfolio and makes the buy and sell decisions, (2) *securities analysts*, who analyse securities and look for viable investment candidates, and (3) *traders*, who buy and sell big blocks of securities at the best possible price.

- The *trustee* (or custodian) safeguards the securities and other assets of the fund, without taking a role in the investment decisions. To discourage foul play, an independent party serves in this capacity. The trustee ensures that the investment manager complies with the investment, reporting and other rules of the fund as set out in the *trust deed*.

All this separation of duties is designed to protect the managed fund investor. Obviously, as a managed fund investor, you will lose money if your fund's share or bond holdings go down in value. But that's really the only risk of loss you face, because the chance of your ever losing money *from fraud, scandal or a fund collapse* is minimal.

Managed Fund Regulations We discussed securities regulation in Chapter 2, and most of those provisions apply to managed funds. For example, all persons dealing in securities or providing investment advice must be licensed by the Australian Securities and Investments Commission (ASIC), and funds must provide an approved prospectus to potential investors. Access is available to the industry ombudsman for investors who incur losses due to administrative mistakes made by fund managers. More specific regulation of the activities of managed funds is found in the *Commonwealth Managed Investments Act*, which was enacted in July 1998. A fund must have a 'responsible entity', which is effectively both the trustee and manager of the fund. All aspects of the trust fund, including administration, appointment of investment managers and custody of fund assets, are the responsibility of the entity.

From a tax perspective, a managed trust fund can be treated as essentially a tax-exempt organisation. Under current income tax legislation, managed trust funds are not subject to income tax, provided their taxable income is fully distributed to unitholders. All franking credits received with investment income are also distributed to unitholders.

Essential Characteristics

Although investing in managed funds has been made as simple as possible, investors nevertheless should have a clear understanding of what they are getting into. For starters, it is essential that you be aware of the many different types of managed funds available. In addition, you should become familiar with the differences in organisational structures, as well as with the wide array of fees and charges that you might encounter when investing in managed funds. The performance of different funds can also vary enormously, as can be seen in Figure 12.4.

Unlisted Funds The term *managed fund is* commonly used to describe an investment trust where investors buy their units from, and sell them back to, the fund itself. When an investor buys units in a fund, the fund issues new units and fills the purchase order with those new units. There is usually no limit, other than investor demand, to the number of units the fund can issue. (Occasionally, funds *temporarily* close themselves to new investors—they won't open any new accounts—in an attempt to keep fund growth in check.) All managed funds stand behind their units and buy them back when investors decide to sell. Thus, there is never any trading between individuals. These **unlisted funds** (known as open-end funds in the United

unlisted funds
a type of managed fund in which investors buy units from, and sell them back to, the fund itself.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 12.4 Example of Fund Performance Data

Information on a fund's past performance over various time frames is available. An example of the type of freely available information is shown below (this will be discussed later in the chapter.)

Fund Name	Date	6 Months %	1 Yr %	3 Yrs % p.a.	5 Yrs % p.a.	7 Yrs % p.a.
Arrowstreet Emerging Markets Fund	30 Sep 2010	3.84	11.58	–1.39	–	–
Arrowstreet Global Equity Fund	30 Sep 2010	–2.61	1.43	–7.47	–	–
Arrowstreet Global Equity Fund (Hedged)	30 Sep 2010	2.58	14.98	3.62	7.43	8.48
BT Macquarie Income Opportunities	30 Sep 2010	2.53	–	–	–	–
Ell Global Property Fund	30 Sep 2010	8.08	20.36	–16.13	–	–
Macquarie — Active Aust Equities Trust	30 Sep 2010	–4.37	0.63	–7.69	3.82	9.37
Macquarie — Emerging Markets Share Trust	30 Sep 2010	3.56	10.17	–2.45	7.28	14.96
Macquarie — Leaders Imputation Trust	30 Sep 2010	–4.57	–1.10	–8.11	3.50	9.10
Macquarie — Leaders Imputation Trust NEF	30 Sep 2010	–4.74	–1.45	–8.43	3.14	8.73
Macquarie — Property Securities Trust	30 Sep 2010	1.80	–5.30	–26.19	–10.71	–2.70
Macquarie — Property Securities Trust NEF	30 Sep 2010	1.61	–5.61	–26.50	–11.13	–3.13
Macquarie — Small Comp Growth Trust NEF	30 Sep 2010	5.31	13.52	–15.20	5.46	12.11
Macquarie — Small Companies Growth Trust	30 Sep 2010	5.51	13.73	–15.10	5.64	12.30
Macquarie Asia New Stars No. 1 Fund	30 Sep 2010	–	–	–	–	–
Macquarie Aus Small Companies Incentives Fund	30 Sep 2010	6.56	15.92	–13.48	–	–

(*Source:* Data from Morningstar, <www.morningstar.com.au>, accessed 4 November 2010.)

States) are the dominant type of managed funds and account for well over 90% of the assets under management. Many of these funds are very large and hold billions of dollars worth of securities.

Both buy and sell transactions in unlisted funds are carried out at values based on the current market value of all the securities held in the fund's portfolio. (Technically, this would also include the book value of any other assets, such as cash and receivables from securities transactions, that the fund might hold at the time, though for all practical purposes these other assets generally account for only a tiny fraction of the fund's total portfolio.) Known as the fund's **net tangible assets** (**NTA**), this current market value is calculated at least once a day and represents the underlying value of a unit in a particular managed fund. NTA is found by taking the total market value of all securities (and other assets) held by the fund, less any liabilities, and dividing this amount by the number of fund units outstanding. For example, if the market value of all the securities (and other assets) held by the XYZ investment fund on a given day equalled $10 million, and if XYZ on that particular day had 500 000 units outstanding, the fund's NTA per unit would amount to $20 ($10 000 000 ÷ 500 000 = $20). This figure, as we will see, is then used to derive the price at which the fund units are bought and sold.

net tangible assets (NTA)
the underlying value of a unit in a particular managed fund.

Listed Funds **Listed funds** (known as closed-end funds in the United States) are managed funds that operate with a fixed number of units outstanding and don't regularly issue new units. In effect, they have a capital structure like that of a company, except that the company's business happens to be investing in marketable securities or other assets. Units in listed funds, like those of an ordinary share, are actively traded in the secondary market. But unlike unlisted funds, all trading in listed funds is done between investors in the open market. The fund itself plays no role in either buy or sell transactions; once the units are issued, the fund is out of the picture. These funds are often referred to as listed trusts or public unit trusts. Most listed trusts are property trusts.

listed funds
a type of managed fund in which investors buy and sell units in the open market.

Listed and unlisted funds are really *two different investment products*: although it may not appear so at first glance, there are some major differences between these two

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

types of funds. To begin with, because listed funds have a fixed amount of capital to work with, they don't have to worry about unit redemptions or new money coming into the fund. Therefore, they don't have to be concerned about keeping cash on hand (or readily available) to meet redemptions. Equally importantly, because there is no pressure on portfolio managers to cash in securities or sell property, for example, at inopportune times, they can be more aggressive in their investment styles and commit to longer term investments. And, of course, because they don't have new money flowing in all the time, portfolio managers don't have to worry about finding new investments, but instead can concentrate on a set portfolio of securities or property.

Of course, this also puts added pressures on the investment managers, since their investment styles and fund portfolios are closely monitored and judged by the market. That is, the unit prices of listed funds are determined not only by their net tangible asset values but also by general supply and demand conditions in the market. As a result, depending on the market outlook and investor expectations, listed funds generally trade at a discount or premium to NTA. (They almost never trade at net tangible asset value.) Unit price discounts and premiums can at times become quite large. In fact, it is not unusual for such spreads to amount to as much as 25–30% of NTA value—occasionally more—depending on market judgments and expectations.

Exchange Traded Funds (ETFs)

Combine some of the operating characteristics of an unlisted fund with some of the trading characteristics of a listed fund, and what you'll end up with is a relatively new form of investment company called an *exchange-traded fund*, or ETF for short. In Australia, most ETFs are structured as *index funds* set up to match the performance of a certain segment of the market. They do this by owning all, or a representative sample, of the securities in a targeted market segment or index. (We'll examine traditional index funds in more detail later in this chapter.) Even though these securities are like listed funds in that they are traded on listed exchanges, *they are in reality unlisted funds*, where the number of shares outstanding can be increased or decreased in response to market demand. Among the advantages of an ETF is that you can buy and sell ETFs at *any time of the day* by placing an order through your broker (and paying a standard commission, just as you would with any other security). In contrast, you *cannot* trade a traditional unlisted fund on an intraday basis; all buy and sell orders for those funds are filled at the end of the trading day, at closing prices. ETFs can also be bought on margin, and they can be sold short. Moreover, because index ETFs are passively managed, they offer all the advantages of any index fund: low cost, low portfolio turnover and low taxes. In fact, the fund's tax liability is kept very low, because ETFs rarely distribute any capital gains to shareholders. Thus, you could hold index ETFs for decades and never pay a cent in capital gains taxes (at least not until you sell the shares).

Entry and Exit Fees and Other Costs The question of whether a fund charges entry fees is a matter of concern only to investors in unlisted funds. The entry fee on an unlisted fund is the commission that the investor pays when buying units in a fund. Entry fees, when charged, can be fairly substantial and can amount to as much as 5% of the purchase price of the units (though only a handful of funds today charge this maximum rate) (see Figure 12.5).

Although there may be little or no difference in the performance of funds charging entry fees and those which do not, *the cost savings with no-entry fee funds tend to give investors a head start in achieving superior rates of return.*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 12.5 A Managed Fund's Fees and Costs

Information on a managed fund's fees and costs is generally available. An example of the type of freely available information is shown below.

Fund Name	MER % p.a.	ICR % p.a	Entry Fee %	Exit Fee %	Buy/Sell Spread %
Arrowstreet Emerging Markets Fund	1.48000	–	0	0	0.98
Arrowstreet Global Equity Fund	–	1.28000	0	0	0.49
Arrowstreet Global Equity Fund (Hedged)	–	1.25000	0	0	0.59
BT Macquarie Income Opportunities	–	1.65000	0	0	0.30
EII Global Property Fund	–	1.18000	0	0	0.96
Macquarie — Active Aust Equities Trust	1.84500	–	3.00	0	0.50
Macquarie — Emerging Markets Share Trust	2.27550	–	5.00	5.00	0
Macquarie — Leaders Imputation Trust	1.80000	–	–	–	0.50
Macquarie — Leaders Imputation Trust NEF	2.14000	–	–	–	0.50
Macquarie — Property Securities Trust	1.96000	–	3.00	0	0.50
Macquarie — Property Securities Trust NEF	2.33000	–	–	–	0.49
Macquarie — Small Comp Growth Trust NEF	2.33000	–	–	–	1.39
Macquarie — Small Companies Growth Trust	1.96000	–	3.00	0	1.39
Macquarie Asia New Stars No. 1 Fund	–	1.46000	0	0	1.00
Macquarie Aus Small Companies Incentives Fund	–	0.43900	0	0	1.39

(*Source:* Data from Morningstar, <www.morningstar.com.au>, accessed 4 November 2010.)

Occasionally, a fund will have an exit fee, which means charges are levied when units are sold or redeemed. These fees may amount to as much as 5% of the value of the units sold, although exit fees tend to decline over time and usually disappear altogether after a few years. The often-stated purpose of exit fees is to enhance fund stability by discouraging investors from trading in and out of the funds over short investment horizons.

Another cost of investing in managed funds is the *management fee*, the compensation paid to the professional managers who administer the fund's portfolio (shown in Figure 12.5 as the MER (management expense ratio) or ICR (indirect costs ratio), which includes the management fee and recoverable expenses). Additionally, fund expenses include the cost of buying and selling the fund's investments, insurance, valuation costs, accounting expenses, audit fees, printing, postage, computer costs, advertising and the like. Unlike entry and exit fees, management fees and expenses are levied annually; they are paid regardless of the fund's performance. The various fees that funds charge generally range from less than 0.5% to as much as 3% of average assets under management. Total expense ratios bear watching, because high expenses take their toll on performance.

A final cost of managed funds is the taxes paid on securities transactions. All (or nearly all) of the dividend and interest income is passed on to the investor, as are any capital gains realised when securities are sold. Thus, the managed fund pays no taxes but instead passes the tax liability on to its unitholders. This holds true whether such distributions are reinvested in the fund (in the form of additional fund units) or paid out in cash. Managed funds annually provide each unitholder with a summary report on the amount of income and capital gains received and the amount of taxable income earned (and to be reported to the Australian Taxation Office) by the fund unitholder.

Keeping Track of Fund Fees and Charges Critics of the managed fund industry have come down hard on the proliferation of fund fees and charges. Indeed, some argue that the different charges and fees are really meant to do one thing: confuse the investor. A lot of funds were going to great lengths—lowering a cost here, tacking on a fee there,

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

hiding a charge somewhere else—to make themselves look like something they weren't. The funds were following the letter of the law, and indeed they were fully disclosing all their expenses and fees. The trouble was that the funds were able to hide all but the most conspicuous charges in a bunch of 'legalese'. Fortunately, steps have been taken to bring fund fees and charges out into the open. Maximum fees must be fully detailed in the fund's prospectus, and the actual fees charged must be shown in the annual report to unitholders.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

12.1 What is a *managed fund*? Discuss the managed fund concept, including the importance of diversification and professional management.

12.2 What are the attractions and drawbacks of managed fund investment?

12.3 Briefly describe how a managed fund is organised. Who are the key players in a typical managed fund organisation?

12.4 What regulations control the operation of managed funds?

12.5 What is the difference between a *listed* and an *unlisted fund*?

12.6 What fees can be levied by fund managers? What are their typical fee rates? Do you believe that fund managers are 'only interested in making money for themselves'? Why, or why not?

Types of Funds and Services

LG3 LG4

Some managed funds specialise in shares, others in bonds. Some have maximum capital gains as an investment objective, and some high current income. Some funds appeal to speculators, while others are of interest primarily to income-oriented investors. Every fund has a particular investment objective, and each fund is expected to do its best to conform to its stated investment policy and objective. Categorising funds according to their investment policies and objectives is a common practice in the managed fund industry, because doing so reflects similarities not only in how the funds manage their money, but also in their risk and return characteristics. Some of the more popular types of managed funds are growth, aggressive growth, equity-income, balanced, growth-and-income, fixed-interest, money market, index, sector, socially responsible, asset allocation and international funds. Let's look now at these various types of managed funds to see what they are and how they operate.

Types of Managed Funds

growth fund
a managed fund whose primary goals are capital gains and long-term growth.

Growth Funds The objective of a **growth fund** is simple: capital appreciation. Long-term growth and capital gains are the primary goals of such funds. Therefore, growth funds invest principally in well-established, large- or mid-cap companies that have above-average growth potential, although they may offer little (if anything) in the way of dividends and current income. Because of the uncertain nature of their investment income, growth funds may involve a fair amount of risk exposure. They are usually viewed as long-term investment vehicles most suitable for the more aggressive investor who wants to build up capital and has little interest in current income.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

aggressive growth fund
a highly speculative managed fund that seeks large profits from capital gains.

Aggressive Growth Funds Aggressive growth funds are the so-called performance funds that tend to increase in popularity when markets heat up. **Aggressive growth funds** are highly speculative investment vehicles that seek large profits from capital gains. Also known as *capital appreciation* or *small-cap* funds, many are fairly small, and their portfolios consist mainly of high-flying shares. These funds often buy shares of small, unseasoned companies, shares with relatively high price/earnings multiples and shares whose prices are highly volatile. They seem to be especially fond of turnaround situations and may even use leverage in their portfolios (that is, buy shares on margin); they also use options fairly aggressively, as well as various hedging techniques. These techniques are designed, of course, to yield big returns. However, aggressive funds are also highly speculative and are among the most volatile of all managed funds. When the markets are good, aggressive growth funds do well; when the markets are bad, these funds often experience substantial losses.

value fund
a managed fund that seeks shares that are undervalued in the market by investing in shares that have low P/E multiples, high dividend yields and promising futures.

Value Funds **Value funds** confine their investing to shares considered to be *undervalued* by the market. That is, the funds look for shares that are fundamentally sound but have yet to be discovered. These funds hold shares as much for their underlying intrinsic value as for their *growth potential*. In stark contrast to growth funds, value funds look for shares with relatively low price/earnings (P/E) ratios, high dividend yields and moderate amounts of financial leverage. They prefer undiscovered companies that offer the potential for growth, rather than those that are already experiencing rapid growth.

Value investing is not easy. It involves extensive evaluation of corporate financial statements and any other documents that will help fund managers to uncover value (investment opportunities) *before the rest of the market does* (that is the key to the low P/E ratios). And the approach seems to work. For even though value investing is generally regarded as *less risky* than growth investing (lower P/E ratios, higher dividend yields and fundamentally stronger companies all translate into reduced risk exposure), the long-term return to investors in value funds is competitive with that from growth funds and even aggressive growth funds. Thus, value funds are often viewed as a viable investment alternative for relatively conservative investors who are looking for the attractive returns that shares have to offer, yet want to keep share price volatility and investment risk in check.

equity-income fund
a managed fund that emphasises current income and capital preservation and invests primarily in high-yielding shares.

Equity-Income Funds **Equity-income funds** emphasise current income by investing primarily in high-yielding shares. Capital preservation is also important, and so are capital gains, although capital appreciation is not a primary objective of equity-income funds. These funds invest heavily in high-grade shares, some convertible securities and preference shares, and occasionally even certain types of high-grade foreign bonds. As far as their shareholdings are concerned, they lean heavily towards blue chips and financial shares. They like securities that generate hefty dividend yields but also consider potential price appreciation over the longer haul. In general, because of their emphasis on dividends and current income, these funds tend to hold higher quality securities that are subject to less price volatility than the market as a whole. They are generally viewed as a fairly low-risk way of investing in shares.

balanced fund
a managed fund whose objective is to generate a balanced return of both current income and long-term capital gains.

Balanced Funds **Balanced funds** tend to hold a balanced portfolio of both shares and bonds for the purpose of generating a well-balanced return of both current income and long-term capital gains. In many respects, they are much like equity-income funds, but balanced funds usually put more into fixed-income securities. The bonds are used

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

principally to provide current income, and shares are selected mainly for their long-term growth potential.

The funds can, of course, shift the emphasis in their security holdings one way or the other. Clearly, the more the fund leans towards fixed-income securities, the more income-oriented it will be. For the most part, balanced funds tend to confine their investing to high-grade securities, including growth-oriented blue-chip shares, high-quality income shares and high-yielding investment-grade bonds. Therefore, they are usually considered a relatively safe form of investing, in which you can earn a competitive rate of return without having to endure a lot of price volatility.

growth-and-income fund
a managed fund that seeks both long-term growth and current income, with primary emphasis on capital gains.

Growth-and-Income Funds

Growth-and-income funds also seek a balanced return made up of both current income and long-term capital gains, but they place a greater emphasis on growth of capital. Moreover, unlike balanced funds, growth-and-income funds put most of their money into equities. Indeed, it is not unusual for these funds to have 80–90% of their capital in ordinary shares. They tend to confine most of their investing to quality issues, so growth-oriented blue-chip shares appear in their portfolios, along with a fair amount of high-quality income shares. Part of the appeal of these funds is the fairly substantial returns many of them have generated over the long haul. Of course, these funds involve a fair amount of risk, if for no other reason than the emphasis they place on shares and capital gains. Thus, growth-and-income funds are most suitable for those investors who can tolerate the risk and price volatility.

fixed-interest fund
a managed fund that invests in various kinds and grades of bonds, with income as the primary objective.

Fixed-Interest Funds

Fixed-interest funds (or bond funds) invest exclusively in various types and grades of bonds—from Commonwealth Treasury bonds to corporate bonds and debentures. Income is the primary investment objective, although capital gains are not ignored. There are three important advantages of buying units in fixed-interest funds rather than investing directly in bonds. First, the funds are generally more liquid than direct investments in bonds. Second, they offer a cost-effective way of achieving a high degree of diversification in an otherwise expensive investment vehicle. (Most bonds carry minimum denominations of $1000–$5000.) Third, fixed-interest funds may automatically reinvest interest and other income, thereby allowing the investor to earn fully compounded rates of return.

Fixed-interest funds, generally considered to be a fairly conservative form of investment, are not without risk, because *the prices of the bonds held in the fund's portfolio fluctuate with changing interest rates*. Many funds are managed pretty conservatively, but a growing number are becoming increasingly aggressive. In fact, much of the growth that fixed-interest funds have experienced recently can be attributed to a more aggressive investment attitude. In today's market, investors can find everything from government bond funds to highly speculative funds that invest in nothing but highly volatile derivative securities. Indeed, exotic derivative securities became a real problem in the United States in 1993–1994, when many of the bond funds that had large positions in derivatives experienced eye-popping losses. These losses taught investors a valuable lesson: watch out for funds with heavy exposure to exotic derivative securities, or at least recognise that if the fund is heavily invested in such securities, you may be in for a very bumpy ride.

Fixed-interest funds today remain a sound investment and continue to be popular with investors who seek a relatively conservative investment outlet. Here is a list of the different types of fixed-interest funds available to investors:

- *Government bond funds*, which invest in government and semi-government securities.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

- *Mortgage-backed bond funds*, which put their money into various types of mortgage-backed securities. These funds appeal to investors for several reasons: (1) they provide diversification, (2) they are an affordable way to get into mortgage-backed securities, and (3) they allow investors (if they so choose) to reinvest the principal portion of the monthly cash flow, thereby enabling them to preserve rather than consume their capital.
- *High-grade corporate debenture funds*, which invest chiefly in highly rated investment-grade securities.
- *Convertible bond funds*, which invest primarily in securities (domestic and possibly foreign) that can be converted or exchanged into ordinary shares. These funds offer investors some of the price stability of bonds, along with the capital appreciation potential of shares.
- *Long-term bond funds*, which invest in bonds with maturities of seven to 10 years or less and offer not only attractive yields but relatively low price volatility as well. Shorter (two- to five-year) funds are also available and are often used as substitutes for money market investments by investors looking for higher returns on their money, especially when short-term rates are way down.

Clearly, no matter what you are looking for in a fixed-income security, you are likely to find a bond fund that fits the bill. The number and variety of such funds is immense: by 2008 there were more than 1900 publicly traded bond funds in the United States that together had almost US$1.6 trillion worth of bonds under management.

money market managed fund (money fund)
a managed fund that pools the capital of investors and uses it to invest in short-term money market instruments.

Money Market Managed Funds

Money market managed funds (or **money funds**) were established to buy and sell short-term money market instruments—bank certificates of deposit (CDs), Treasury notes and the like. For the first time, investors with modest amounts of capital were given access to the high-yielding money market, where many instruments require minimum investments of $100 000 or more. (Money market managed funds, along with other short-term investment vehicles, were discussed in detail in Chapter 1.) The idea caught on quickly, and the growth in money funds was nothing short of phenomenal. As at 30 June 2009, there was more than $43 billion in these funds in Australia. There are two main kinds of money funds:

- *General-purpose money funds*, which invest in any and all types of money market investment vehicles, from Treasury notes and bank CDs to corporate commercial paper. The vast majority of money funds are of this type. They invest their money wherever they can find attractive short-term yields.
- *Government securities funds*, which were established as a way to meet investor concerns for safety. They effectively eliminate any risk of default by confining their investments to short-term government and semi-government securities.

Just about every major brokerage company, bank and investment company has its own money market managed fund. Most require minimum investments of $1000 (although $2500 to $5000 minimum requirements are not uncommon). Because the maximum average maturity of fund holdings does not exceed 90 days, money funds are highly liquid investment vehicles. They are also very low in risk and virtually immune to capital loss, because a high percentage of the fund's assets are invested in top-rated/prime-grade securities. Because the interest income produced tends to follow general interest rate conditions, the returns to unitholders are subject to the ups and downs of market interest rates. Even so, the yields on money funds are highly

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

competitive with those of other short-term securities. And with some funds providing cheque-writing privileges, money funds can be just as liquid as cheque or savings accounts. They are viewed by many investors as a convenient, safe and profitable way to accumulate capital and temporarily store idle funds.

index fund
a managed fund that buys and holds a portfolio of shares (or bonds) equivalent to those in a specific market index.

Index Funds 'If you can't beat 'em, join 'em.' That saying pretty much describes the idea behind index funds. Essentially, an **index fund** is a type of managed fund that buys and holds a portfolio of shares (or bonds) equivalent to those in a market index like the ASX All Ordinaries Index (the All Ords). An index fund that is trying to match the All Ords, for example, would hold the same shares that are held in that index, in exactly (or very nearly) the same proportions. Rather than trying to beat the market, as most actively managed funds do, *index funds simply try to match the market*—that is, to match the performance of the index on which the fund is based. They do this through low-cost investment management; in fact, in most cases, the whole portfolio is run almost entirely by a computer that matches the fund's holdings with those of the targeted index.

The approach of index funds is strictly buy-and-hold. Indeed, about the only time an index-fund portfolio changes is when the targeted market index alters its 'market basket' of securities. (Occasionally an index will drop a few securities and replace them with new ones.) A pleasant by-product of this buy-and-hold approach is that the funds have extremely low portfolio turnover rates and, therefore, very little in *realised* capital gains. As a result, aside from a modest amount of dividend income, these funds produce very little taxable income from year to year, which causes some high-income investors to view them as a type of tax-sheltered investment.

In addition to their tax shelter, these funds provide something else: by simply trying to match the market, index funds actually produce *highly competitive returns* to investors! It is very tough to outperform the market, whether you are a professional investment manager or a seasoned individual investor. Index funds readily acknowledge this fact and don't even try to outperform the market; all they try to do is match market returns. Surprisingly, the net result of this strategy, combined with *a very low cost structure*, is that most index funds readily outperform the vast majority of all other types of share funds. Indeed, historical data show that only about 20–25% of share funds outperform the market. Because a (true) index fund pretty much matches the market, these funds tend to produce better returns than 75–80% of competing share funds.

Besides the All Ords, a number of other market indices are used, including the ASX 200 and the ASX 300, international-share indices and even overseas bond indices. When picking index funds, be sure to avoid high-cost funds; such fees significantly *reduce* the chance that the fund will be able to match the market. Also, avoid index funds that use gimmicks as a way to 'enhance' yields. That is, rather than follow the index, these funds will 'tilt' their portfolios in an attempt to outperform the market. Your best bet is to buy a *true* index fund—one that has no added 'bells and whistles'—and a low-cost one at that.

sector fund
a managed fund that restricts its investments to a particular segment of the market.

Sector Funds One of the hottest products is the so-called **sector fund**, a managed fund that restricts its investments to a particular sector, or segment, of the market. These funds concentrate their investment holdings in one or more industries that make up the sector being aimed at. For example, a health-care sector fund would focus on such industries as pharmaceutical companies, hospital management companies, medical suppliers and biotech concerns. The portfolio of a sector fund would then consist of

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

promising growth shares from these particular industries. Among the more popular sector funds are those that concentrate their investments in real estate, technology, financial services, gold and precious metals, leisure and entertainment, natural resources, electronics, chemicals, computers, telecommunications and, of course, the dot.coms—all the 'glamour' industries.

The overriding investment objective of a sector fund is *capital gains*. A sector fund is similar to a growth fund in many respects and should be considered speculative. The sector fund concept is based on the belief that the really attractive returns come from small segments of the market; so, rather than diversifying your portfolio across the market, put your money where the action is! It is an interesting notion that may warrant consideration by investors willing to take on the added risks that often accompany these funds.

Socially Responsible (or 'Ethical') Funds For some, investing is far more than just cranking out financial ratios and calculating investment results. To these investors, the security selection process doesn't end with bottom lines, P/E ratios, growth rates and betas. Rather, it also includes the *active, explicit consideration of moral, ethical and environmental issues*. The idea is that social concerns should play just as big a role in investment decisions as do profits and other financial matters. Not surprisingly, there are a number of funds that cater to such investors. Known as **socially responsible funds**, they actively and directly incorporate ethics and morality into the investment decision. Their investment decisions revolve around *both* morality and profitability.

socially responsible fund
a managed fund that actively and directly incorporates ethics and morality into the investment decision.

Socially responsible funds consider only certain companies for inclusion in their portfolios; if a company doesn't meet the fund's moral, ethical or environmental tests, fund managers simply won't consider buying the share, no matter how good the bottom line looks. Generally speaking, these funds refrain from investing in companies that derive revenues from tobacco, alcohol or gambling; that are weapons contractors; or that operate nuclear power plants. In addition, the funds tend to favour companies that produce 'responsible' products or services, have strong employee relations and positive environmental records, and are socially responsive to the communities in which they operate. Although these screens may seem to eliminate a lot of shares from consideration, these funds (most of which are fairly small) still have plenty of securities to choose from, so it is not difficult for them to keep their portfolios fully invested.

As far as performance is concerned, the general perception is that there is a price to pay, in the form of lower average returns, for socially responsible investing. That's not too surprising, however, for whenever you add more investment hurdles, you are likely to reduce return potential. But to those who truly believe in socially responsible investing, the sacrifice apparently is worth it.

Asset Allocation Funds Studies have shown that the most important decision an investor can make is where to allocate his or her investment assets. *Asset allocation* involves deciding how you are going to divide up your investments among different types of securities. For example, what portion of your money do you want to devote to money market securities, what portion to shares and what portion to bonds? Asset allocation deals in broad terms (types of securities) and doesn't address individual security selection. Strange as it may seem, asset allocation has been found to be a far more important determinant of total returns on a portfolio than individual security selection.

asset allocation fund
a managed fund that spreads investors' money across shares, bonds and money market securities.

Because many individual investors have a tough time making asset allocation decisions, the managed fund industry has created a product to do the job for them. Known as **asset allocation funds**, these funds spread investors' money across different types of

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

AGE AND ASSET ALLOCATION— Although there are several important factors to consider when determining the right asset allocation, like investment objective and market conditions, an old guideline bases the decision on your age. The rule says that the percentage of your portfolio invested in shares should equal 100 minus your age. For example, if you are 25, then your portfolio would be 75% invested in shares; as you get older the rule shifts your portfolio from riskier shares to less risky bond or money market instruments. However, since people are living longer now, many financial planners recommend subtracting your age from 110 or 120 in order to determine your share allocation. Use of this larger number reflects your need to make your money last longer in retirement and the fact that you will need the extra growth that shares can provide over a longer investment horizon.

markets. That is, whereas most managed funds concentrate on one type of investment—whether shares, bonds or money market securities—asset allocation funds put money into all these markets. Many of them also include foreign securities in the asset allocation scheme, and some even include inflation-resistant investments, such as gold or real estate. These funds are all designed for people who want to hire fund managers not only to select individual securities for them but also to decide how to allocate money among the various markets.

Here's how a typical asset allocation fund works. The investment manager establishes a desired allocation mix, which might look something like this: 50% of the portfolio goes to Australian shares, 30% to bonds, 10% to international securities and 10% to money market securities. Securities are then purchased for the fund in these proportions, and the overall portfolio maintains the desired mix. Actually, each segment of the fund is managed almost as a separate portfolio. Thus, securities within, say, the share portion are bought, sold and held as the market dictates.

What really separates asset allocation funds from the rest of the pack is that *as market conditions change over time, the asset allocation mix changes as well*. For example, if the Australian sharemarket starts to soften, funds will be moved out of shares to some other area; as a result, the share portion of the portfolio might drop to, say, 35% and the foreign securities portion might increase to 25%. Of course, there is no assurance that the investment manager will make the right moves at the right time, but the expectation with these funds is that he or she will. (It is interesting to note that *balanced funds* are really a form of asset allocation fund, except that they tend to follow *a fixed-mix* approach to asset allocation—putting, say, 60% of their portfolio into shares and 40% into bonds—and then pretty much stick to that mix, no matter what the markets are doing.)

Asset allocation funds are supposed to provide investors with one-stop shopping. That is, you just find an asset allocation fund that fits your needs and invest in it, rather than buying a couple of share funds, a couple of bond funds, and so on. The success of these funds rests not only on how well the money manager picks securities, but also on how well he or she times the market and moves funds among different segments of the market. Managed funds are considered by many to be the ultimate asset allocation vehicle, a fact that has led a number of fund companies to develop what some suggest is the ultimate managed fund product: *managed funds that invest in other managed funds*.

international fund
a managed fund that does all or most of its investing in foreign securities.

International Funds In their search for higher yields and better returns, Australian investors have shown a growing interest in foreign securities. Sensing an opportunity, the managed fund industry was quick to respond with a proliferation of so-called **international funds**—a type of managed fund that does all or most of its investing in foreign securities. Just compare the number of international funds around today with those in existence a few years ago: in the United States in 1985 there were only about 40 of these funds; by 2009 the number had grown to more than 1200. The fact is that a lot of people would like to invest in foreign securities but simply don't have the experience or know-how to do so. International funds may be just the vehicle for such investors, *provided they have at least a basic appreciation of international economics*. Because these funds deal with the international economy, balance-of-trade positions and currency valuations, investors should have a fundamental understanding of what these issues are and how they can affect fund returns.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Technically, the term *international fund* describes a type of fund that invests *exclusively in foreign securities*, often confining its activities to specific geographic regions (e.g. the United States, Europe or the Pacific Rim). In addition, international funds known as *global funds* invest not only in foreign securities but also in Australian companies—usually multinational corporations. As a rule, global funds provide more diversity and, with access to both foreign and domestic markets, can go wherever the action is.

Regardless of whether they are global or international (we will use the term *international* to apply to both), you will find just about any type of fund you could possibly want in the international sector. There are international share funds, international bond funds, even international money market funds. There are aggressive growth funds, balanced funds, long-term growth funds, high-grade bond funds, and so forth. There are funds that confine their investing to large, established markets (e.g. Japan, Germany or the United States) and others that stick to the more exotic (and risky) emerging markets (e.g. Thailand, Mexico, Chile and even former Communist countries like Poland). No matter what your investment philosophy or objective, you are likely to find what you are looking for in the international arena.

Basically, these funds attempt to take advantage of international economic developments in two ways: (1) by capitalising on changing market conditions, and (2) by positioning themselves to benefit from a devaluation of the dollar. They do so because they can make money either from rising share prices in a foreign market or, perhaps just as importantly, from a falling dollar (which in itself produces capital gains for Australian investors in international funds). Many of these funds, however, attempt to protect their investors from currency exchange risks by using various types of *hedging strategies*. That is, by using foreign currency options and forward exchange rate agreements (or some other type of derivative product), the fund tries to eliminate (or reduce) the effects of fluctuating currency exchange rates. Some funds, in fact, do this on a permanent basis. In essence, these funds hedge away exchange risk so that they can concentrate on the higher returns offered by the foreign securities themselves. Others are only occasional users of currency hedges and employ them only when they feel there is a real chance of a substantial swing in currency values. But even with currency hedging, international funds are still considered fairly high-risk investments and should be used only by investors who understand and are able to tolerate such risks.

Investor Services

Ask most investors why they buy a particular managed fund and they will probably tell you that the fund provides the kind of income and return they are looking for. Now, no one would question the importance of return in the investment decision, but there are some other important reasons for investing in managed funds, not the least of which are the valuable services they provide. Some of the most sought-after *managed fund services* are automatic investment and reinvestment plans, regular income programs, conversion and phone-switching privileges.

automatic investment plan
a managed fund service that allows unitholders to send fixed amounts of money from their pay or bank accounts automatically into the fund.

Automatic Investment Plans It takes money to make money, and for an investor, that means being able to accumulate the capital to put into the market. Unfortunately, this is not always easy. Enter managed funds, which have come up with a program that makes savings and capital accumulation as painless as possible. The program is the **automatic investment plan** (or regular savings plan) which allows fund shareholders to automatically funnel fixed amounts of money *from their pay or bank accounts* into a

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

managed fund. It's much like a payroll deduction plan, where investments to your managed fund are automatically deducted from your pay or bank account.

This fund service has become very popular, because it enables unitholders to invest on a regular basis without having to think about it. Just about every fund group offers some kind of automatic investment plan for virtually all of its share and bond funds. To enrol, you simply fill out a form authorising the fund to siphon a set amount (usually a minimum amount applies per period) from your bank account or pay at regular intervals, such as monthly or quarterly. Once enrolled, you will be buying more units in the fund(s) of your choice every month or quarter. Of course, if the fund charges entry fees, you will still have to pay these charges on your periodic investments. To remain diversified, you can divide your money among as many funds (within a given fund family) as you like. Finally, you can get out of the program any time you like, without penalty, by simply calling the fund. Although convenience is perhaps the chief advantage of automatic investment plans, they also make solid investment sense: one of the best ways of building up a sizeable amount of capital is to add funds to your investment program systematically over time. The importance of making regular contributions to your investment program cannot be overstated; it ranks right up there with compound interest.

Automatic Reinvestment Plans An automatic reinvestment plan can be one of the real attractions of managed funds. Whereas automatic investment plans deal with money the unitholder is putting into a fund, automatic reinvestment plans deal with the distributions the funds pay to their unitholders. Much like the dividend reinvestment plans we looked at with shares (in Chapter 6), the **automatic reinvestment plans** of managed funds enable you to keep your capital fully employed. Through this service, income and/or capital gains distributions are automatically used to buy additional units in the fund. Most funds deal in fractional units. Keep in mind, however, that even though an investor may reinvest all income and capital gains distributions, the taxation laws still treat them as cash receipts and tax them as investment income in the year in which they were received.

automatic reinvestment plan
a managed fund service that enables unitholders automatically to buy additional units in the fund through reinvestment of income and capital gains distributions.

Automatic reinvestment plans are especially attractive because they enable investors to earn fully compounded rates of return. That is, by ploughing back profits, the investor can essentially put his or her profits to work in generating even more earnings. Indeed, the effects of these plans on total accumulated capital over the long run can be substantial.

Regular Income Although automatic investment and reinvestment plans are great for the long-term investor, what about the investor who is looking for a steady stream of income? Once again, managed funds have a service to meet this kind of need. It's called a **regular withdrawal plan**, and it is offered by some funds. Once enrolled in one of these plans, an investor automatically receives a predetermined amount of money every month or quarter. Most funds require a minimum investment in order for the investor to participate. The funds will pay out the monthly or quarterly amount first from income and realised capital gains. If this source proves to be inadequate and the unitholder so authorises, the fund can then redeem some of the units to meet the required periodic payments.

regular withdrawal plan
a managed fund service that enables unitholders automatically to receive a predetermined amount of money every month or quarter.

Conversion Privileges and Phone Switching Sometimes investors find it necessary to switch out of one fund and into another. For example, the investor's investment objectives or the investment climate itself may have changed. **Conversion** (or **transfer**) **privileges** were devised to meet the needs of such investors in a convenient and

conversion (or transfer) privilege
a feature of a managed fund that allows shareholders to move money from one fund to another, within the same family of funds.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

fund families
different kinds of managed funds offered by a single investment management company.

economical manner. Investment management companies that offer a number of different funds—known as **fund families**—often provide conversion privileges that enable shareholders to move easily from one fund to another, possibly even by phone. Indeed, with *phone switching* you simply pick up the phone to move money among funds—the only constraint being that the switches must be confined to the same *family* of funds. For example, you can switch from an AMP high-growth fund to an AMP blue-chip fund, an AMP cash management trust or any other fund managed by AMP. With some fund families, the alternatives open to investors seem almost without limit. They all provide low-cost conversion/phone-switching privileges, and some even provide these privileges free, although most families that offer free exchanges have limits on the number of times such switches can occur each year.

Conversion privileges are usually considered beneficial from the shareholder's point of view, because they allow investors to meet their ever-changing long-term investment goals. In addition, they permit investors to manage their fund holdings more aggressively by allowing them to move in and out of funds as the investment environment changes. Unfortunately, there is one major drawback: for tax purposes, the exchange of units from one fund to another may be regarded as a sale transaction followed by a subsequent purchase of new units. As a result, if any capital gains exist at the time of the exchange, the investor is liable for the taxes on that profit, even though the holdings were not truly liquidated.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

12.7 Briefly describe each of the following types of managed funds:

a. *Aggressive growth funds*
b. *Equity-income funds*
c. *Growth-and-income funds*
d. *Fixed-interest funds*
e. *Sector funds*
f. *Socially responsible funds*

12.8 What is an asset *allocation fund*, and how does it differ from other types of managed funds?

12.9 If growth, income and capital preservation are the primary objectives of managed funds, why do we bother to categorise them by type? Do you think such classifications are helpful in the fund selection process? Explain.

12.10 What are *fund families*? What advantages do fund families offer investors? Are there any disadvantages?

12.11 Briefly describe some of the investor services provided by managed funds. What are *automatic reinvestment plans*, and how do they differ from *automatic investment plans*? What is phone switching, and why would an investor want to use this type of service?

Investing in Managed Funds

LG5 LG6

Suppose you are confronted with the following situation: you have money to invest and are trying to select the right place to put it. You obviously want to pick a security that meets your idea of acceptable risk and will generate an attractive rate of return. The problem is that you have to make the selection from a list of many hundreds of securities. Sound like a 'mission impossible'? Well, that's basically what you are up against when trying to select a suitable managed fund. However, if the problem is approached systematically, it may not be so formidable a task. As we will see, it is possible to whittle down the list of alternatives by matching your investment needs with

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

the investment objectives of the funds. Before doing that, though, it might be helpful to examine more closely the various investor uses of managed funds. With this background, we can then look at the selection process and at several measures of return that can be used to assess performance.

Investor Uses of Managed Funds

Managed funds can be used by individual investors in a variety of ways. For instance, performance funds can serve as a vehicle for capital appreciation, whereas bond funds can provide current income. Regardless of the kind of income a managed fund provides, individuals tend to use these investment vehicles for one of three reasons: (1) as a way to accumulate wealth, (2) as a storehouse of value, and (3) as a speculative vehicle for achieving high rates of return.

Accumulation of Wealth Accumulation of wealth is probably the most common reason for using managed funds. Basically, the investor uses managed funds over the long haul to build up investment capital. Depending on the investor's personality, a modest amount of risk may be acceptable, but usually preservation of capital and capital stability are considered important. The whole idea is to form a 'partnership' with the managed fund in building up as big a capital pool as possible. You provide the capital by systematically investing and reinvesting in the fund, and the fund provides the return by doing its best to invest your resources wisely.

Storehouse of Value Investors may also use managed funds as a storehouse of value. The idea here is to find a place where investment capital can be fairly secure and relatively free from deterioration yet still generate a relatively attractive rate of return. Short- and intermediate-term fixed-interest funds are logical choices for such purposes, and so are cash management trusts. Capital preservation and income over the long term are very important to some investors, whereas others might seek storage of value only for the short term, using money funds as a place to 'sit it out' until a more attractive opportunity comes along.

Speculation and Short-Term Trading Speculation is not a common use of managed funds; the reason, of course, is that most managed funds are long-term in nature and thus not meant to be used as aggressive trading vehicles. However, a growing number of funds (for example, sector funds) now cater to speculators, and some investors find that managed funds are, in fact, attractive outlets for speculation and short-term trading.

One way to do this is to trade in and out of funds aggressively as the investment climate changes. Entry/exit or transfer fees can be avoided (or reduced) by dealing in families of funds offering low-cost conversion privileges and/or by dealing only in no-entry/exit fee funds. Other investors might choose to invest in funds for the long run but still seek high rates of return by investing in aggressive managed funds. A number of funds follow very aggressive trading strategies, which may well appeal to investors who are willing to accept substantial risk exposure. These are usually the fairly specialised, smaller funds: sophisticated enhanced-yield funds, leverage funds, option funds, emerging-market funds, small-cap aggressive growth funds and sector funds are examples. In essence, such investors are simply applying the basic managed fund concept to their investment needs by letting professional money managers handle their accounts in a way they would like to see them handled: *aggressively*.

INVESTOR FACTS

SOME MANAGED FUND FACTS EVERY INVESTOR SHOULD KNOW . . .

- Even great funds have bad years every now and then.
- Sometimes, even bad funds have great years.
- Most share (and bond) funds fail to beat the market.
- You don't need a broker to buy managed funds.
- A fund that doesn't charge a sales commission isn't necessarily a low-cost fund.
- If you own more than a dozen different funds, you probably own too many.
- Managed fund names can be misleading.
- Funds with high yields don't necessarily produce high returns.
- Money funds are not risk-free (their returns are still subject to market fluctuations).

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Selection Process

When it comes to managed funds, there is one question every investor has to answer: Why invest in a managed fund to begin with—why not just go it alone by buying individual shares and bonds directly? For beginning investors and investors with little capital, the answer is pretty simple: with managed funds, investors are able to achieve far more diversification than they could ever get on their own, and they get the help of professional investment managers at a very reasonable cost. For more seasoned, wealthier investors, the answers are probably a bit more involved. Certainly, diversification and professional funds management come into play, but there are other reasons as well. The competitive returns offered by managed funds are a factor with many investors, as are the services they provide. Many well-to-do investors have simply decided they can get better returns over the long haul by carefully selecting managed funds than by investing on their own. As a result, they put all or a big chunk of their money into funds. Some of these investors use part of their capital to buy and sell individual securities on their own and use the rest *to buy managed funds that invest in areas they don't fully understand or don't feel well informed about*. For example, they will use managed funds to get into foreign markets, to buy mortgage-backed securities, or to buy value funds (because that is such a tricky and time-consuming way to invest).

Once you have decided to use managed funds, you have to decide which fund(s) to buy. In many respects, the selection process is critical in determining how much success you will have with managed funds. It means putting into action all you know about funds, in order to gain as much return as possible from an acceptable level of risk. The selection process begins with an assessment of your own investment needs, which sets the tone of the investment program. Obviously, what you want to do is select from many funds the one or two (or three or four) that will best meet your total investment needs.

Objectives and Motives for Using Funds Selecting the right investment means finding those funds that are most suitable to your investment needs. The place to start is with your own investment objectives. In other words, why do you want to invest in a managed fund, and what are you looking for in a fund? Obviously, an attractive rate of return would be desirable, but there is also the matter of a tolerable amount of risk exposure. Face it: some investors are more willing to take risks than others. Probably, when you look at your own risk temperament in relation to the various types of managed funds available, you will discover that certain types of funds are more appealing to you than others. For instance, aggressive growth or sector funds are usually *not* attractive to individuals who wish to avoid high exposure to risk.

Another important factor in the selection process is the intended use of the managed fund. That is, do you want to invest in managed funds as a means of accumulating wealth, as a storehouse of value, or to speculate for high rates of return? This information puts into clearer focus the question of exactly what you are trying to do with your investment dollars. Finally, there is the matter of the types of services provided by the fund. If you are particularly interested in certain services, you should be sure to look for them in the funds you select. Having assessed what you are looking for in a fund, you are ready to look at what the funds have to offer.

What the Funds Offer Just as each individual has a set of investment needs, each fund has its own *investment objective*, its own *manner of operation* and its own *range of services*. These three parameters are useful in helping you to assess investment alternatives. But where do you find such information? One obvious place is the fund's

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

profile, or its prospectus (or 'product disclosure statement'), which supplies information on investment objectives, portfolio composition, management and past performance. Publications such as *AFR Smart Investor* and *Money* also offer useful information about managed funds. These sources provide a wealth of operating and performance statistics in a convenient and easy-to-read format.

There are also a number of reporting services that provide background information and assessments on a wide range of funds. Standard & Poor's and Morningstar are the most widely used in Australia. Both organisations provide an independent 'star' rating for many funds. Funds are rated on a scale from one star (poor-quality fund/fund manager) to five stars (excellent fund/fund manager), based on past performance and management strategy. In addition, all sorts of performance statistics are available on the Internet for easy use on home computers. For example, quarterly or annually updated software is available, at very low cost, from Morningstar.

Using sources like these, investors can obtain information on such things as investment objectives, fees and charges, management expense ratios, summary portfolio analyses, services offered, historical statistics and reviews of past performance. Alternatively, you can look to the publications put out by the funds themselves, as shown in Figure 12.6.

Whittling Down the Alternatives At this point, the fund selection becomes a process of elimination as investor needs are weighed against the types of funds available. A large number of funds can be eliminated from consideration simply because they fail to meet stated needs. Some funds may be too risky; others may be unsuitable as a storehouse of value. Thus, rather than trying to evaluate all of the potential funds, you can narrow down the list to two or three *types* of funds that best match your investment needs. From here, you can whittle down the list a bit more by introducing other constraints. For example, because of cost considerations, you may want to deal only in funds that have no, or low, entry/exit fees (more on this topic below), or you may be seeking certain services that are important to your investment goals.

Now we introduce the final (but certainly not the least important) element in the selection process: *the fund's investment performance*. Useful information includes: (1) how the fund has performed over the past five to seven years, (2) the type of return it has generated in good markets as well as bad, (3) the level of income and capital gains distributions, and (4) the type of investment stability the fund has enjoyed over time (or put another way, the amount of volatility/risk in the fund's return). By evaluating such information, you can identify some of the more successful managed funds—the ones that not only offer the investment objectives and services you seek but also provide the best payoffs. And while you are looking at performance, it probably wouldn't hurt to check out the fund's *fee structure*. Be on guard for funds that charge abnormally high management fees; they can really hurt returns over time.

Note that in this decision process, considerable weight is given to *past performance*. As a rule, the past is given little or no attention in the investment decision—after all, it is the future that matters. Although the *future performance* of a managed fund is still the variable that holds the key to success, investors should look carefully at past investment results to see how successful the fund's investment managers have been. In essence, the success of a managed fund rests in large part on the *investment skills of the fund managers*. Therefore, when investing in a managed fund, look for consistently good performance, in up as well as down markets, over *extended* periods of time (five years or more). Most important, check whether the same key people are still running the fund. Although past success is certainly no guarantee of future performance, a strong team of money managers can have a significant bearing on the level of fund returns.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 12.6

Some Relevant Information about Specific Managed Funds

Most fund managers provide regularly updated information about the operating results, investment holdings and market strategy of specific managed funds.

(*Source:* Bendigo Bank Managed Funds Update, September 2010, <http://bendigobank.com.au/public/personal/investment/pdf/fund_updates/conservative_balanced_future growth/September_2010.pdf>.)

Bendigo Bank wealth

Bendigo Managed Funds Update

Economic commentary

Global markets stabilised over the past quarter on fading contagion debt fears and the Federal Reserve's indication that a second round of quantitative easing would eventuate.

After a volatile first half of 2010 European markets smoothed out over the September quarter. Measures by the European Union and International Monetary Fund to constrain contagion debt issues had some success restoring confidence in global financial markets.

China's economy continued to expand growing at an annualised rate of 10%. The Chinese Government has the difficult task of providing sustainable consistent growth while addressing property bubble and inflation concerns. Over the past quarter Chinese authorities have successfully managed their economy by tightening credit conditions. China is now the largest exporter and manufacturer in the world and the second biggest economy. On the back of a large Chinese trade surplus currency tensions between America and China have emerged with America calling for China to allow their currency to appreciate.

America continues to have difficulties in decreasing unemployment and stimulating growth. Unemployment remains high at 9.6%, with the economy growing at just 1.7%. Due to these factors it is widely expected the Federal Reserve will undertake a second round of quantitative easing which has been welcomed by global equity markets. While the long term effects of this strategy are debatable, the move is aimed at stimulating the American economy by lowering the cost of debt and increasing asset prices.

Locally, Australia's economy continues to remain strong and resilient to issues abroad. The RBA expects the Australian economy to grow by 3.25% over 2010 and 3.75% over 2011. This rates Australia as the best performing economy in the OECD and third globally behind China and India.

Australia's cash rate is one of the highest amongst the developed world which is reflective of our strong economic position. The RBA left rates unchanged over the past quarter with interest rate strategists mixed on further movements. Unemployment remains at low historical levels at 5.1%, which although good for the country, can place future inflationary pressures as the economy approaches full capacity. Despite this inflation data has remained within the RBA's target range.

The positive outlook for the Australian economy coupled by subdued expectations of the American and European economies has pushed the Australian dollar higher lifting from US84 cents to US97 by the end of the quarter.

Markets review

International equities retracted 1% for the September quarter, compared to an increase of 8.3% for the Australian market. Much of the difference can be contributed to the appreciation of the Australian dollar which was up 13.4% against the U.S.

Industrials where the best performing sector up 17.8%, consumer staples and utilities both rose 11.9%, materials up 10.6% and financials climbed 8.0%. Weighted heavily by a fall in the price of Telstra, the telecommunications sector was the lowlight down 13.6%.

Domestic property returned 3.6% while Global property was the best performing asset class over the past quarter climbing 14.8%. Renewed demand particularly in the US sparked the rise in which had suffered substantially during the financial crises.

Australian fixed interest climbed 1.3%, international fixed interest 3.5% and cash returned 1.2% for the quarter ended September.

Fund information

Performance statistics

Fund	Withdrawal price	Fund size (million)
Bendigo Conservative Fund	$0.8752	$5.18
Bendigo Balanced Fund	$0.7811	$7.39
Bendigo Future Growth Fund	$0.7182	$4.90
Fund start date		**7 June 2002**

Fund Performance

Performance period	Fund performance#	Average index return*
Bendigo Conservative Fund		
3 months	+2.9%	+2.6%
1 year	+4.9%	+4.6%
3 years^	+0.9%	+1.3%
5 years^	+3.5%	+4.5%
Bendigo Balanced Fund		
3 months	+2.8%	+3.3%
1 year	+2.3%	+2.9%
3 years^	-3.6%	-3.6%
5 years^	+1.6%	+2.9%
Bendigo Future Growth Fund		
3 months	+3.6%	+3.8%
1 year	+1.1%	+1.9%
3 years^	-6.5%	-5.3%
5 years^	+1.1%	+2.3%

* Morningstar average return index for Growth, Balanced and Conservative.

^ % performance per annum.

Performance figures are calculated before tax and after fees and costs, using redemption prices and assumes distributions are reinvested. Past performance is not an indication of future performance.

Stick with Funds Having No or Low Entry/Exit Fees There is a long-standing 'debate' in the managed fund industry regarding funds which charge entry/exit fees and those which do not. Do funds with entry/exit fees add value? And if not, then why pay the fees? As it turns out, the results generally don't support the idea that such funds provide added value. Indeed, the returns earned by funds charging entry/exit fees, in

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

general, don't seem to be any better than the returns from those which only charge annual fees. In fact, in many cases, the funds with abnormally high entry/exit fees and charges often produce returns that are far less than what you can get from other funds. In addition, because of compounding, the differential returns tend to widen with longer holding periods. But that should come as no surprise, because big entry fees reduce your investable capital—and therefore reduce the amount of money you have working for you. In fact, the only way a fund charging entry fees can overcome this handicap is to produce *superior* returns—which is no easy thing to do, year in and year out. Granted, a handful of these funds may have produced very attractive returns over extended periods of time, but they are the exception rather than the rule.

Obviously, it is in your best interest to pay close attention to all charges (and other fees) whenever you consider investing in a managed fund. As a rule, to maximise returns, you should *seriously consider sticking to funds with no, or low, entry/exit fees*. At the very minimum, you should consider a more expensive fund *only* if it has a much better performance record (and offers more return potential) than a less expensive fund. There may well be times when the higher costs are justified, but far more often than not, you are better off trying to minimise charges. That shouldn't be difficult to do. There are hundreds of funds to choose from, and they come in all different types and sizes. What's more, most of the top-performing funds are found in the universe of those which only charge annual fees. So, why would you even want to look anywhere else?

Some Key Differences between Listed and Unlisted Funds Because listed funds trade like shares, you must deal with a broker to buy or sell units, and the usual brokerage commissions apply. Unlisted funds, in contrast, are bought from and sold to the fund managers themselves. Another important difference between listed and unlisted funds is their liquidity. You can buy and sell relatively large dollar amounts of an unlisted fund at its NTA without worrying about affecting the price. However, a relatively large buy or sell order for a listed fund could easily bump your price up or down. Thus, the greater liquidity of unlisted funds gives them a distinct advantage. Just like unlisted funds, most listed funds offer reinvestment plans, but in many cases, that's about it. Listed funds simply don't provide the full range of services that managed fund investors are accustomed to.

All things considered, probably the most important difference (because it *directly affects* investor costs and returns) is the way these funds are priced in the marketplace. Whereas unlisted funds can be bought and sold at NTA (plus any entry fees or minus any exit fees), listed funds have *two* values—a market value, or unit price, and an NTA value. The two are rarely the same, because listed funds typically trade at either a premium or a discount. The premium or discount is calculated as follows:

Equation 12.1

$$\text{Premium (or discount)} = (\text{Unit price} - \text{NTA}) \div \text{NTA}$$

Suppose fund A has an NTA of $10. If its unit price is $8, it will sell at a 20% discount. That is:

$$\begin{aligned}\text{Premium (or discount)} &= (\$8 - \$10) \div \$10 \\ &= -\$2 \div \$10 = -0.20 = \underline{\underline{-20\%}}\end{aligned}$$

Because this answer is negative, the fund is trading at a *discount*. On the other hand, if this same fund were priced at $12 per unit, it would be trading at a *premium* of 20%—

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

that is, ($12 – $10) ÷ $10 = $2 ÷ $10 = 0.20. Because the value is positive, the fund is trading at a premium (above its NTA).

What to Look for in a Listed Fund If you know what to look for and your timing and selection are good, you may find that some *deeply discounted* listed funds provide a great way to earn attractive returns. For example, if a fund trades at a 20% discount, you pay only 80 cents for each dollar's worth of assets. At certain times, the market offers the opportunity to pick up funds at attractive prices—which could well be the case when double-digit discounts exist. At other times, discounts may be too narrow to represent any special value. If you can buy a fund at an abnormally wide discount and sell it when the discount narrows or turns to a premium, you can enhance your overall return. In fact, even if the discount doesn't narrow, your return will be improved, because the yield on your investment is higher than it would be with an otherwise equivalent unlisted fund. The reason: you are investing less money. Here is a simple example. Suppose a listed fund trades at $8, a 20% discount from its NTA of $10. If the fund distributed $1 in income for the year, it would yield 12.5% ($1 divided by its $8 price). However, if it was an unlisted fund without entry fees, it would be trading at its higher NTA and therefore would yield only 10% ($1 divided by its $10 NTA). Thus, when investing in listed funds, be sure to pay close attention to the size of the premium and discount; in particular, keep your eyes open for funds trading at deep discounts, because that feature alone can enhance potential returns.

For the most part, except for the premium or discount, a listed fund should be analysed just like any other managed fund. That is, pay close attention to the expense ratio, portfolio turnover rate, past performance, cash position and so on. In addition, study the history of the discount. Information on listed (and unlisted) funds can be found in such publications as *AFR Smart Investor* and *Money*. Also, keep in mind that with listed funds, you probably won't get a prospectus (as you might with an unlisted fund), because they don't continuously offer new units to investors.

One final point to keep in mind when developing a listed fund investment program: stay clear of new issues (IPOs) of listed funds and funds that sell at steep *premiums*. Never buy new listed funds when they are brought to the market as IPOs. Why? IPOs are often brought to the market at *hefty premiums*, and the investor therefore faces the almost inevitable risk of losing money as the units fall to a discount within a month or two. This drop in price occurs because the IPO funds have to be offered at a premium just to cover the amount of the underwriting spread. You also want to avoid funds that are trading at premiums—especially at steep premiums, such as volatile single country portfolios. That, too, can lead to built-in losses when, if sentiment sours, these premiums quickly turn to discounts.

Measuring Performance

As in any investment decision, return performance is a major dimension in the managed fund selection process. The level of dividends paid by the fund, its capital gains and its growth in capital are all-important aspects of return. Such return information enables you to judge the investment behaviour of a fund and to appraise its performance in relation to other funds and investment vehicles. Here, we will look at different measures that investors can use to assess managed fund return. Also, because risk is so important in defining the investment behaviour of a fund, we will examine managed fund risk as well.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Sources of Return An unlisted managed fund has three potential sources of return: (1) dividend income, (2) capital gains realised, and (3) unrealised capital gains (or change in the net asset value) of the fund. Depending on the type of fund, some managed funds derive more income from one source than from another. For example, we would normally expect income-oriented funds to have much higher dividend income than capital gains.

Unlisted managed funds regularly publish reports that recap investment performance. One such report is the *Summary of Income and Capital Changes*, an example of which appears in Table 12.1. This statement, found in the fund's profile or prospectus, gives a brief overview of the fund's investment activity, including expense ratios and portfolio turnover rates. Of interest to us here is the top part of the report (which runs from 'Net asset value, beginning of period' to 'Net asset value, end of period'—lines 1 to 10). This part reveals the amount of dividend income and capital gains distributed to the shareholders, along with any change in the fund's net asset value.

income distributions
payments made to unitholders derived from dividends, interest and other income earned on the holdings of a managed fund.

Income distributions (see line 7 of Table 12.1) are derived from the dividend and interest income earned on the security holdings of the managed fund. They are paid out of the *net investment income* that's left after the fund has met all operating expenses. When the fund receives dividend or interest payments, it passes these on to shareholders in the form of dividend payments. The fund accumulates all of the current income for the period and then pays it out on a prorated basis. Thus, if a fund earned, say, $2 million in dividends and interest in a given year and if that fund had 1 million shares outstanding, each share would receive an annual dividend payment of $2. Because the managed fund itself is tax exempt, any taxes due on dividend earnings are payable by the individual investor.

realised capital gains
payments made to managed fund unitholders that come from the profits that a fund makes from the sale of its securities (or other assets).

Realised capital gains (see line 8 of Table 12.1) work on the same principle, except that these payments are derived from the *capital gains actually earned* by the fund. It works like this: suppose the fund bought a security a year ago for $50 per share and sold those shares in the current period for $75 per share. Clearly, the fund has achieved

TABLE 12.1 A Report of Mutual Fund Income and Capital Changes (for a share outstanding throughout the year)

	2010	2009	2008
1. **Net asset value, beginning of period**	**$24.47**	**$27.03**	**$24.26**
2. **Income from investment operations**			
3. Net investment income	$0.60	$0.66	$0.50
4. Net gains on securities (realised and unrealised)	6.37	(1.74)	3.79
5. Total from investment operations	$6.97	$(1.08)	$4.29
6. **Less distributions:**			
7. Dividends from net investment income	($0.55)	($0.64)	($0.50)
8. Distributions from realised gains	(1.75)	(.84)	(1.02)
9. Total distributions	$(2.30)	$(1.48)	$(1.52)
10. **Net asset value, end of period**	$29.14	$24.47	$27.03
11. **Total return**	28.48%	(4.00%)	17.68%
12. **Ratios/supplemental data**			
13. Net assets, end of period ($000)	$307,951	$153,378	$108,904
14. Ratio of expenses to average net assets	1.04%	0.85%	0.94%
15. Ratio of net investment income to average net assets	1.47%	2.56%	2.39%
16. Portfolio turnover rate*	85%	144%	74%

**Portfolio turnover rate* relates the number of shares bought and sold by the fund to the total number of shares held in the fund's portfolio. A high turnover rate (in excess of 100%) means the fund has been doing a lot of trading.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

capital gains of $25 per share. If it held 50 000 shares of this security, it would have realised a total capital gain of $1 250 000. Given that the fund has 1 million shares outstanding, each share is entitled to $1.25 in the form of a capital gains distribution. (From a tax perspective, if the capital gains result from the sale of securities held for one year or longer they qualify as capital gain income for tax purposes; if not, then they're treated as ordinary income.)

unrealised capital gains (paper profits)
a capital gain made only 'on paper'—that is, not realised until the fund's holdings are sold.

Unrealised capital gains (or **paper profits**) are what make up the third and final element of a managed fund's return. When the fund's holdings go up or down in price, the net asset value of the fund moves accordingly. Suppose an investor buys into a fund at $10 per share and sometime later the fund's net asset value (NAV) is quoted at $12.50. The difference of $2.50 per share is the unrealised capital gains. It represents the profit that shareholders would receive (and are entitled to) if the fund were to sell its holdings. (Actually, as Table 12.1 shows, some of the change in net asset value can also be made up of undistributed income.)

For listed investment companies, the return is derived from the same three sources as that for unlisted funds, and from a *fourth source* as well: changes in price discounts or premiums. But because the discount or premium is already embedded in the share price of a fund, the third element of return for a listed fund—change in share price—is made up not only of change in net asset value but also of change in price discount or premium.

What About Future Performance? There's no doubt that a statement like the one in Table 12.1 provides a convenient recap of a fund's past behaviour. Looking at past performance is useful, but it does not tell you what the future will be. Ideally, you want an indication of what the same three elements of return—dividend income, capital gains distribution and change in NAV—*will be*. But it's extremely difficult—if not impossible—to get a firm grip on what the future holds in dividends, capital gains and NAV. That's because a managed fund's future performance is directly linked to the *future make-up of the securities in its portfolio*, something that is next to impossible to get a clear reading on. It's not like evaluating the expected performance of a particular share, in which case you're keying in on just one company. With managed funds, investment performance depends on the behaviour of many different shares and bonds.

Where, then, can you look for insight into future performance? Most market observers suggest that the first place to look is the market itself. In particular, try to get a fix on the future direction of *the market as a whole*. The behaviour of a well-diversified managed fund tends to reflect the general tone of the market. Thus, if the market is expected to drift up, so should the performance of managed funds. Also spend some time evaluating the *track records* of managed funds in which you are interested. Past performance has a lot to say about the investment skills of the fund's money managers.

Measures of Return A simple but effective measure of performance is to describe managed fund return in terms of the three major sources noted above: dividends earned, capital gains distributions received and change in price. When dealing with investment horizons of one year or less, we can convert these fund payoffs into a return figure by using the standard holding period return (HPR) formula. The computations necessary are illustrated following using the 2010 figures from Table 12.1. In 2010, this hypothetical low-cost, unlisted fund paid 55 cents per share in dividends and another $1.75 in capital gains distributions. It had a price at the beginning of the year of $24.47 that rose to $29.14 by the end of the year. Thus, summarising this investment performance, we have:

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Price (NAV) at the *beginning* of the year (line 1)	$24.47
Price (NAV) at the *end* of the year (line 10)	29.14
Net increase	$ 4.67
Return for the year:	
Dividends received (line 7)	$ 0.55
Capital gains distributions (line 8)	1.75
Net increase in price (NAV)	4.67
Total return	$ 6.97
Holding period return (HPR) (total return/beginning price)	**28.48%**

INVESTOR FACTS

WHERE TO ACCESS FUND DATA?—Information such as details of fund performance, prices and strategies is published regularly. However, for the most up-to-date information, use the Web. Both Standard & Poor's and Morningstar allow access to fund data through various filters—search by fund type, size, rating, performance and so on. It couldn't be easier!

This HPR measure is comparable to the procedure used by the fund industry to report annual returns; this same value can be seen in Table 12.1, line 11, which shows the fund's total return. It not only captures all the important elements of managed fund return but also provides a handy indication of yield. Note that the fund had a total dollar return of $6.97, and on the basis of a beginning investment of $24.47, the fund produced an annual return of nearly 28.5%.

HPR with Reinvested Dividends and Capital Gains Many managed fund investors have their income and/or capital gains distributions reinvested in the fund. How do you obtain a measure of return when you receive your (income/capital gains) payout in additional units rather than cash? With slight modifications, you can continue to use holding period return; the only difference is that you have to keep track of the number of units acquired through reinvestment. To illustrate, let's continue with the example above and assume that the investor initially bought 200 units in the managed fund. Assume also that you were able to acquire units through the fund's reinvestment program at an average price of $26.50 a unit. Thus, the $460 in income and capital gains distributions (($0.55 + $1.75) × 200) provided you with another 17.36 units in the fund ($460 ÷ $26.50). Holding period return under these circumstances would relate the market value of the unit holdings at the beginning of the period with holdings at the end:

Equation 12.2

$$\text{Holding period return} = \frac{\left(\begin{array}{c}\text{Number of units at } \textit{end} \\ \text{of period}\end{array} \times \begin{array}{c}\text{Ending} \\ \text{value}\end{array}\right) - \left(\begin{array}{c}\text{Number of units at } \textit{beginning} \\ \text{of period}\end{array} \times \begin{array}{c}\text{Initial} \\ \text{value}\end{array}\right)}{\begin{array}{c}\text{Number of units} \\ \text{at } \textit{beginning} \text{ of period}\end{array} \times \begin{array}{c}\text{Initial} \\ \text{value}\end{array}}$$

Thus, the holding period return would be:

$$\text{Holding period return} = \frac{(217.36 \times \$29.14) - (200 \times \$24.47)}{(200 \times \$24.47)}$$

$$= \frac{(\$6333.87) - (\$4894.00)}{\$4894.00} = 29.4\%$$

This holding period return, like the preceding one, provides a rate-of-return measure that can now be used to compare the performance of this fund to those of other funds and investment vehicles.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Measuring Long-Term Returns Rather than using one-year holding periods, it is sometimes necessary to assess the performance of managed funds over extended periods of time. In these cases, it would be inappropriate to employ holding period return as a measure of performance. But that's no problem, because when faced with multiple-year investment horizons, we can use the present-value–based internal rate of return (IRR) procedure to determine the fund's average annual compound rate of return. To illustrate, refer to the following annual income and capital gains distributions for a three-year period:

	Years ended 30 June		
	2011	2010	2009
Income distributions	$0.55	$0.64	$0.50
Capital gains distributions	$1.75	$0.84	$1.02
Total distributions	$2.30	$1.48	$1.52

Now, assuming that the fund units had an NTA value of $24.26 at the beginning of the period (1 July 2008) and $29.14 three years later (30 June 2011), we have the following time line of cash flows:

	Subsequent Cash Flows		
Initial Cash Flow	Year 1	Year 2	Year 3
$24.26	$1.52	$1.48	$2.30 + $29.14
(Beginning price)	(Distributions)	(Distributions)	(Distributions + Ending price)

The idea is to find the discount rate that will equate the annual income/capital gains distributions *and* the ending price in year 3 to the beginning value of the units ($24.26).

Using standard present-value techniques, we find that the managed fund provided its investors with an annual rate of return of 13.1% over the three-year period—that is, at 13.1%, the present values of the cash flows in years 1, 2 and 3 equal the beginning value of the fund ($24.26). Such information is helpful in assessing fund performance and in comparing the return performance of one fund to other funds and investment vehicles.

Returns on Listed Funds The returns of listed funds are customarily reported on the basis of their NTAs—that is, *price premiums and discounts are ignored when calculating various return measures*. At the same time, it is becoming increasingly common to see return performance expressed in terms of actual market prices, a practice that captures the impact of changing market premiums or discounts on holding period returns. As you might expect, the greater the premiums or discounts and the greater the changes in these values over time, the greater their impact on reported returns. That is, it is not at all uncommon for listed funds to have totally different market-based and NTA-based holding period returns. When NTAs are used, you find the returns on listed funds in exactly the same way as you do the returns on unlisted funds. In contrast, when market values are used to measure return, all you need to do is substitute the market price of the fund (with its embedded premium or discount) for the corresponding NTA in the holding period or internal rate of return measure. Some listed fund investors like to run *both* NTA-based and market-based measures of return to see how changing premiums (or discounts) have added to or hurt the returns on their managed fund holdings. Even so, as a rule, NTA-based return numbers are generally

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

viewed as the preferred measures of performance, because the fund managers often have little or no control over changes in premium or discounts. Thus, NTA-based measures are felt to give a truer picture of the performance of the fund itself.

The Matter of Risk Because most managed funds are so diversified, their investors are largely immune to the business and financial risks normally present with individual securities. Even with extensive diversification, however, the investment behaviour of most funds is still exposed to a considerable amount of *market risk*. In fact, because managed fund portfolios are so well diversified, they often reflect the behaviour of the marketplace itself and, as we have noted, tend to perform very much like the market. Although a few funds, like gold funds, tend to be defensive (or countercyclical), market risk is an important behavioural ingredient in a large number of managed funds. When formulating a managed fund investment program, investors should be aware of the effect that the general market has on the investment performance of a fund. For example, if the market is trending downwards and you anticipate a continuation of such a trend, it might be best to place any new investment capital into something like a cash management trust until the market reverses itself. At that time, you can make a more long-term commitment.

Another important risk consideration revolves around the management practices of the fund itself. If the portfolio is managed conservatively, the risk of a loss in capital is likely to be much less than for aggressively managed funds. Obviously, the more speculative the investment goals of the fund, the greater the risk of instability in the net asset value. On the other hand, a conservatively managed portfolio doesn't necessarily eliminate all price volatility, because the securities in the portfolio are still subject to inflation, interest rate and general market risks. However, these risks are generally reduced or minimised as the investment objectives and portfolio management practices of the funds become more conservative.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

12.12 How important is the general behaviour of the market in affecting the price performance of managed funds? Explain. Why is a fund's past performance important to the managed fund selection process? Does the future behaviour of the market matter in the selection process? Explain.

12.13 What information should be considered when examining a managed fund's investment performance?

12.14 Identify three potential sources of return to managed fund investors and briefly discuss how each could affect total return to shareholders.

12.15 Discuss the various types of risk to which managed fund shareholders are exposed. What is the main risk exposure of managed funds? Are all funds subject to the same level of risk? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Describe the basic features of managed funds and note what they have to offer as investment vehicles. Managed funds represent ownership in a diversified, professionally managed portfolio of securities; many investors who lack the time, know-how or commitment to manage their own money turn to managed funds as an investment outlet. By investing in managed funds, unitholders benefit from a level of diversification and investment performance they might otherwise find difficult to achieve. In addition, they can establish an investment program with a limited amount of capital and obtain a variety of investor services not available elsewhere.

LG 2 Distinguish between unlisted and listed managed funds and discuss the various types of fund fees and charges. Investors can buy either unlisted funds, which have no limit on the number of units they may issue, or listed funds, which have a fixed number of shares outstanding and trade in the secondary markets like any other ordinary share. There is a cost, however, to investing in managed funds. That is, fund investors face an array of fees and charges, including entry fees, exit fees and management fees. Some of these costs are one-time charges (for example, entry fees), but others are paid annually (for example, management fees). Investors should have a good handle on fund costs, which can be a real drag on fund performance and return.

LG 3 Discuss the types of funds available and the variety of investment objectives these funds seek to fulfil. Each fund has an established investment objective that determines its investment policy and identifies it as a certain type of fund. Some of the more popular types of funds are growth funds, aggressive growth funds, equity-income funds, balanced funds, growth-and-income funds, asset allocation funds, index funds, fixed interest funds, money funds, sector funds, socially responsible funds and international funds. The different categories of funds have different risk–return characteristics and are important variables in the fund selection process.

LG 4 Identify and discuss the investor services offered by managed funds and how these services can fit into an investment program. In addition to investment returns, managed funds may also offer special services, such as automatic investment and reinvestment plans, systematic withdrawal programs, low-cost conversion and phone-switching privileges.

LG 5 Gain an appreciation of the investor uses of managed funds, along with the variables that one should consider when assessing and selecting funds for investment purposes. Managed funds can be used to accumulate wealth, as a storehouse of value, or as a vehicle for speculation and short-term trading. The fund selection process generally starts by assessing the investor's needs and wants. The next step is to consider what the funds have to offer, particularly with regard to investment objectives, risk exposure and investor services. The investor then narrows down the

Key Terms

managed fund, *p. 391*
management fee, *p. 393*
pooled diversification, *p. 392*

listed funds, *p. 396*
net tangible assets, *p. 396*
unlisted funds, *p. 395*

aggressive-growth fund, *p. 400*
asset allocation fund, *p. 404*
automatic investment plan, *p. 406*
automatic reinvestment plan, *p. 407*
balanced fund, *p. 400*
conversion (transfer) privilege, *p. 407*
equity-income fund, *p. 400*
fixed-interest fund, *p. 401*
fund families, *p. 408*
growth-and-income fund, *p. 401*
growth fund, *p. 399*
index fund, *p. 403*
international fund, *p. 405*
money market managed funds (money funds), *p. 402*
regular withdrawal plan, *p. 407*
sector fund, *p. 403*
socially responsible fund, *p. 404*
value fund, *p. 400*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
alternatives by aligning his or her needs with the types of funds available and, from this short list of funds, applies the final selection tests: fund performance and cost.	
LG 6 **Identify the sources of return, and calculate the rate of return earned on an investment in a managed fund.** The payoff from investing in a managed fund includes distribution of income, distribution of realised capital gains and growth in capital (unrealised capital gains). Various measures of return recognise these elements and provide simple, yet effective, ways of gauging the annual rate of return from a managed fund. Risk is also important to managed fund investors. A fund's extensive diversification may protect investors from business and financial risks. But considerable market risk still remains because most funds tend to perform much like the market, or at least like that segment of the market in which they specialise.	income distributions, *p. 415* realised capital gains, *p. 415* unrealised capital gains (paper profits), *p. 416*

Discussion Questions

LG 1 LG 2

Q12.1 Contrast *managed fund ownership* with *direct investment in shares and bonds*. Assume your class is going to debate the merits of investing through managed funds versus investing directly in shares and bonds. Develop some arguments on each side of this debate and be prepared to discuss them in class. If you had to choose one side to be on, which would it be? Why?

LG 3

Q12.2 For each pair of funds listed below, select the one that is likely to be the *less* risky. Briefly explain your answer.

- **a.** Growth versus growth-and-income funds
- **b.** Equity-income versus high-grade corporate bond funds
- **c.** Balanced versus sector funds
- **d.** Global versus aggressive growth funds

LG 3 LG 5

Q12.3 Imagine that you have just inherited $50 000 from a rich relative. Now you are faced with the 'problem' of how to spend it. You could use it as a deposit on a home unit, or you could buy that sports car you have always wanted. Or you could build a managed fund portfolio. After some soul-searching, you decide to do the latter: to build a $50 000 managed fund portfolio. Using actual managed funds and actual quoted prices, come up with a plan to invest as much of the $50 000 as you can in a portfolio of managed funds. Be specific! Briefly describe your planned portfolio, including the investment objectives you are trying to achieve.

Problems

All problems are available on **www.pearson.com.au/myfinancelab**

LG 6

P12.1 A year ago, an investor bought 200 units of a managed fund at $8.50 per unit; over the past year, the fund has made an income distribution of 90 cents per unit and had a capital gains distribution of 75 cents per unit.

- **a.** Find the investor's holding period return, given that this fund now has a net tangible asset value of $9.10.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

b. Find the holding period return, assuming all the dividends and capital gains distributions are reinvested into additional units of the fund at an average price of $8.75 per unit.

LG6 **P12.2** A year ago, the Really Big Growth Fund was being quoted at an NTA of $21.50 and an offer price of $23.35; today it is being quoted at $23.04 (NTA) and $25.04 (offer). What is the holding period return on this listed fund (a) based on NTA values and (b) based on offer prices? Assume that it was purchased a year ago and that its income and capital gains distributions over the year have totalled $1.05 per share? Which HPR would you use to evaluate the fund manager's performance? Why?

LG6 **P12.3** The All State Managed Fund has the following five-year record of performance.

Per Unit	2010	2009	2008	2007	2006
Income distributions	0.95	0.85	0.85	0.75	0.60
Capital gains distributions	1.05	1.00	—	1.00	—
NTA at beginning of year	$12.53	$8.45	$10.64	$8.99	$10.00
NTA at end of year	$15.73	$12.53	$8.45	$10.64	$8.99

Find this fund's five-year (2006–2010) average annual compound rate of return; also find its three-year (2008–2010) average annual compound rate of return. If an investor bought the fund at the beginning of 2006 at $10 a unit and sold it five years later (at the end of 2010) at $15.73, how much total profit per unit would she have made over the five-year holding period?

LG6 **P12.4** You have uncovered the following per-unit information about a certain listed fund.

	2008	2009	2010
Ending unit prices:			
Offer	$46.20	$64.68	$61.78
NTA	43.20	60.47	57.75
Income distributions	2.10	2.84	2.61
Capital gains distributions	1.83	6.26	4.32
Beginning unit prices:			
Offer	55.00	46.20	64.68
NTA	51.42	43.20	60.47

On the basis of this information, find the fund's holding period return for 2008, 2009 and 2010. (In all three cases, assume you buy the fund at the beginning of the year and sell it at the end of each year at the market offer prices.) In addition, find the fund's average annual compound rate of return over the three-year period from 2008 to 2010 based on NTA values.

LG2 LG6 **P12.5** Listed below is the 10-year, per-unit performance record of Andre & Steffi's Growth Fund.

	Years Ended 30 June									
($)	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Income distributions	0.83	1.24	0.90	0.72	0.46	0.65	0.37	0.26	0.33	0.58
Capital gains distributions	2.42	3.82	—	9.02	6.84	1.78	3.69	1.88	1.23	9.92
Net tangible asset value:										
Beginning of year	58.60	52.92	44.10	59.85	55.34	37.69	35.21	34.25	19.68	29.82
End of year	64.84	58.60	52.92	44.10	59.85	55.34	37.69	35.21	34.25	19.68

Use this information to find the fund's holding period return in 2010 and 2007. Also find the fund's rate of return over the five-year period 2006–2010 and the 10-year period 2001–2010.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG3 LG6 **P12.6** Using the resources available at your campus or public library, select five managed funds—a growth fund, an equity-income fund, an international (share) fund, a sector fund and a property fund—that you feel would make good investments. Briefly explain why you selected these funds. List the funds' holding period returns for the past year and their annual compound rates of return for the past three years.

LG6 **P12.7** One year ago, Super Star Listed Fund had an NTA of $10.40 and was selling at an 18% discount; today its NTA is $11.69 and it is priced at a 4% premium. During the year, Super Star made income distributions of 40 cents and had a capital gains distribution of 95 cents. On the basis of the above information, calculate each of the following:

a. Super Star's NTA-based holding period return for the year.

b. Super Star's market-based holding period return for the year. Did the market premium/discount hurt or add value to the investor's return? Explain.

c. Repeat the market-based holding period return calculation, except this time assume that the fund started the year at an 18% *premium* and ended it at a 4% *discount*. (Assume the beginning and ending NTAs remain at $10.40 and $11.69, respectively.) Is there any change in this measure of return? Why?

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 12.1 REVEREND ROB PONDERS MANAGED FUNDS

LG3 LG5 Reverend Rob is the minister of a church in the Hobart area. He is married, has one young child and earns a 'modest income'. Because religious organisations are not famous for their generous superannuation programs, the Reverend has decided he should do some investing on his own. He would like to set up a program that enables him to supplement the church's superannuation fund and at the same time provide some funds for his child's university education (which is still some 12 years away). He isn't out to break any investment records but feels he needs some backup in order to provide for the long-term needs of his family.

Although his income is meagre, Reverend Rob feels that, with careful planning, he can probably invest about $250 a quarter (and, with luck, increase this amount over time). He currently has about $15 000 in a savings account that he would be willing to use to begin this program. In view of his investment objectives, he isn't interested in taking a lot of risk. Because his knowledge of investments extends to savings accounts, Commonwealth Government bonds and a little bit about managed funds, he approaches you for some investment advice.

QUESTIONS

1. In light of Reverend Rob's long-term investment goals, do you think managed funds are an appropriate investment vehicle for him?
2. Do you think he should use his $15 000 savings to start a managed fund investment program?
3. What type of managed fund investment program would you set up for the Reverend? Include in your answer some discussion of the types of funds you would consider, the investment objectives you would set, and any investment services (for example, withdrawal plans) you would seek. Would taxes be an important consideration in your investment advice? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 12.2 TOM YEE SEEKS THE GOOD LIFE

LG3 LG4 LG5 LG6 Tom Yee is a widower who recently retired after a long career with a major manufacturer. Beginning as a skilled craftsman, he worked his way up to the level of factory supervisor over a period of more than 30 years with the company. Tom receives a generous superannuation pension which amounts to over $3500 per month (part of which is tax free). The Yees had no children, so he lives alone. Tom owns a two-bedroom rental house that is next to his home, and the rental income from it covers the mortgage payments for both the rental house and his house.

Over the years, Tom and his late wife Camilla always tried to put a little money aside each month. The results have been nothing short of phenomenal; the value of Tom's liquid investments (all held in bank term deposits and savings accounts) runs well into the six figures. Up to now, Tom has just let his money grow and hasn't used any of his savings to supplement his pension and rental income. But things are about to change. Tom has decided, 'What the heck, it's time I started living the good life!' Tom wants to travel and, in effect, start reaping the benefits of his labours. He has therefore decided to move $100 000 from one of his savings accounts to one or two high-yielding managed funds. He would like to receive $1000 to $1500 a month from the fund(s) for as long as possible, because he plans to be around for a long time.

QUESTIONS

1. Given Tom's financial resources and investment objectives, what kinds of managed funds do you think he should consider?
2. What factors in Tom's situation should be taken into consideration in the fund selection process? How might these affect Tom's course of action?
3. What types of services do you think he should look for in a managed fund?
4. Assume that Tom invests in a managed fund that earns about 12% annually from dividend income and capital gains. Given that Tom wants to receive $1000 to $1500 a month from his fund, what would be the size of his investment account five years from now? How large would the account be if the fund earned 16% on average and everything else remained the same? How important is the fund's rate of return to Tom's investment situation? Explain.

Excel with Spreadsheets

Unlisted managed funds have their own quotation system where two primary data variables are the net asset value (NAV) and the year-to-date returns. The NAV represents the price you get when you sell shares, or what you pay when you buy low-cost funds.

Create a spreadsheet model similar to the spreadsheet for Table 12.1, which you can view at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885, to analyse the following three years of data relating to the MoMoney Managed Fund. It should report the amount of dividend income and capital gains distributed to the shareholders, along with any other changes in the fund's net asset value.

Questions

1. What is the total income from the investment operations?
2. What are the total distributions from the investment operations?
3. Calculate the net asset value for MoMoney Fund as of the end of the years 2010, 2009 and 2008.
4. Calculate the holding period returns for each of the years 2010, 2009 and 2008.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The proliferation of managed funds as an investment outlet for individual investors has been phenomenal. The World Wide Web provides a plethora of sites that offer information on this topic. These sites can tell you just about anything you want to know about managed funds. A few interesting sites are listed here.

WEBSITE	URL
Money Management	www.moneymanagement.com.au
MoneyManager	www.moneymanager.com.au
Morningstar	www.morningstar.com.au
Standard & Poor's	www.fundsinsights.com.au

Visit **www.pearson.com.au/myfinancelab** for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER

13

Managing Your Own Portfolio

LEARNING GOALS

After studying this chapter, you should be able to:

- **LG1** Explain how to use an asset allocation scheme to construct a portfolio consistent with investor objectives.
- **LG2** Discuss the data and indices needed to measure and compare investment performance.
- **LG3** Understand the techniques used to measure income, capital gains and total portfolio return.
- **LG4** Use the Sharpe, Treynor and Jensen measures to compare a portfolio's return with a risk-adjusted, market-adjusted rate of return, and discuss portfolio revision.
- **LG5** Describe the role and logic of dollar-cost averaging, constant-dollar plans, constant-ratio plans and variable-ratio plans.
- **LG6** Explain the role of limit and stop-loss orders in investment timing, warehousing liquidity and timing investment sales.

He's known as the 'Oracle of Omaha' for his share-picking prowess, and in 2008 he was ranked by *Forbes* as the richest person in the world with an estimated net worth of US$62 billion. As chairman of Berkshire Hathaway, Inc., Warren Buffett has multiplied his investors' money by a factor of 2935 since taking over the company in 1964. The Omaha-based corporation's 51 subsidiaries include insurance (GEICO), apparel (Fruit of the Loom), building products (Acme Brick Company), energy (MidAmerican Energy Holdings Company), food and gourmet retailers (International Dairy Queen, The Pampered Chef), flight services (FlightSafety International), home furnishings (Star Furniture) and jewellery retailers (Helzberg Diamonds). In addition, Berkshire Hathaway is a public investment company with major holdings in companies that read like a veritable who's who of American business: American Express, Burlington Northern, Coca-Cola, ConocoPhillips, Procter & Gamble, The Washington Post, Wells Fargo and many others.

Owning a piece of this diversified company will cost you a lot. In November 2009, the A shares were trading above $100 000 per share. Alternatively, you can buy B shares, which trade for one-thirtieth of the A shares' value. From 1965 to 2008, Berkshire Hathaway's book value per share grew from $19 to $70 530—that is a compounded annual rate of 20.3%.

What's the secret to Buffett's success? His long-term investing horizon and patience are legendary. His claim to fame has been his ability to buy businesses at prices far below what he calls their 'intrinsic' value, which includes such intangibles as quality of management and the power of superior brand names. Buffett waits until a desired investment reaches his target price (perceived value) and won't buy until then. 'We measure our success by the long-term progress of the companies rather than by the month-to-month movements of their stocks', he says.

As you'll see in this chapter, which introduces the basics of portfolio management, investing is a process of analysis, followed by action, followed by still more analysis. You may not be the next Warren Buffett (or maybe you will!), but understanding his techniques for building and evaluating your own portfolio will put you on the right track.

(*Source:* Berkshire Hathaway corporate website, <www.berkshirehathaway.com> (accessed September 2009); historical data from <www.bigcharts.marketwatch.com> (accessed September 2009).)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Constructing a Portfolio Using an Asset Allocation Scheme

LG 1

We begin by examining the criteria for constructing a portfolio and then use them to develop a plan for allocating assets in various investment categories. This plan provides a basic, useful framework for selecting individual investments for the portfolio. In attempting to weave the concepts of risk and diversification into a solid portfolio policy, we will rely on both traditional and modern approaches (see Chapter 5).

Investor Characteristics and Objectives

Your financial and family situations are important inputs in determining portfolio policy. Vital determinants include level and stability of income, family factors, net worth, investor experience and age, and disposition towards risk. The types of investments in your portfolio depend on your relative income needs and ability to bear risk.

The size of your income and the certainty of your employment also bear on portfolio strategy. An investor with a secure job can handle more risk than one with a less secure position. Also, the higher your income, the more important the tax ramifications of an investment program become. Your investment experience also influences your investment strategy. It normally is best to 'get one's feet wet' in the investment market by slipping into it gradually rather than leaping in head first. A cautiously developed investment program is likely to provide more favourable long-run results than an impulsive one.

INVESTOR FACTS

SELF-ASSESSMENT—Many banks and financial advisers issue questionnaires to self-assess your investor characteristics, investor knowledge and portfolio approaches. The monthly magazine, *Smart Investor*, runs a regular feature, 'Acid Test', which allows you to self-assess your investment know-how and the information levels required to undertake successful portfolio management.

Now you should ask yourself: 'What do I want from my portfolio?' You must generally choose between high current income or significant capital appreciation. It is difficult to have both. The price of having high appreciation potential is often low potential for current income.

Your needs may determine which avenue you choose. A retired person whose income depends on his or her portfolio will probably choose a lower risk, current-income–oriented approach. A high-income, financially secure investor may be much more willing to take on risky investments in the hope of improving net worth. Thus, a portfolio must be built around your needs, which depend on income, responsibilities, financial resources, age, retirement plans and ability to bear risk.

Portfolio Objectives and Policies

Constructing a portfolio is a logical activity that is best done after you have analysed your needs and the available investments. When planning and constructing a portfolio, you should consider these objectives: current income needs, capital preservation, capital growth, tax considerations and risk.

Any one or more of these factors will play an influential role in defining the desirable type of portfolio. They can be tied together as follows: the first two items, *current income* and *capital preservation*, are consistent with a low-risk, conservative investment strategy. Normally, a portfolio with this orientation contains low-beta (low-risk) securities. The third item, a *capital growth objective*, implies increased risk and a reduced level of current income. Higher risk growth shares, options, futures and other more speculative investments may be suitable for this investor. The fourth item, an investor's *tax bracket*, will influence investment strategy. A high-income investor probably wishes to defer taxes and earn investment returns in the form of capital gains. This implies a strategy of higher risk investments and a longer holding period. Lower bracket investors are less concerned with how they earn the income, and they may wish

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

to invest in higher current-income securities. The most important item, finally, is *risk*. Investors should consider the risk–return tradeoff *in all investment decisions*.

Developing an Asset Allocation Scheme

Once you have translated your needs into specific portfolio objectives, you can construct a portfolio designed to achieve these goals. Before buying any investments, however, you must develop an *asset allocation scheme*. **Asset allocation** involves dividing your portfolio into various asset classes, such as shares, bonds, foreign securities, short-term securities, and other assets like tangibles (especially gold) and real estate. The emphasis of asset allocation is on *preservation of capital*—protecting against negative developments while taking advantage of positive ones. Asset allocation is a bit different from diversification: its focus is on *investment in various asset classes*. Diversification, in contrast, tends to focus more on **security selection**—selecting the *specific* securities to be held *within* an asset class.

asset allocation
a scheme that involves dividing one's portfolio into various asset classes to preserve capital by protecting against negative developments while taking advantage of positive ones.

security selection
the procedures used to select the specific securities to be held within an asset class.

Asset allocation is based on the belief that the total return of a portfolio is influenced more by the division of investments into asset classes than by the actual investments. In fact, studies have shown that as much as 90% or more of a portfolio's *return* comes from asset allocation. Therefore, less than 10% can be attributed to the actual security selection. Furthermore, researchers have found that asset allocation has a much greater impact on reducing *total risk* than does selecting the best investment in any single asset category.

Approaches to Asset Allocation

There are three basic approaches to asset allocation: (1) fixed weightings, (2) flexible weightings, and (3) tactical asset allocation. The first two differ with respect to the proportions of each asset category maintained in the portfolio. The third is a more exotic technique used by institutional portfolio managers.

fixed-weightings approach
an asset allocation plan in which a fixed percentage of the portfolio is allocated to each asset category.

Fixed Weightings The **fixed-weightings approach** allocates a fixed percentage of the portfolio to each of the asset categories, of which there typically are three to five. Assuming four categories—shares, bonds, foreign securities and short-term securities—a fixed allocation might be as follows.

Category	Allocation
Shares	30%
Bonds (fixed-income securities)	50
Foreign securities	15
Short-term securities	5
Total portfolio	100%

Generally, the fixed weightings do not change over time. When market values shift, you may have to adjust the portfolio annually or after major market moves to maintain the desired fixed-percentage allocations.

Fixed weights may or may not represent equal percentage allocations to each category. One could, for example, allocate 25% to each of the four categories above. Research has shown that over a long period, equal (20%) allocations to shares, foreign shares, long-term bonds, cash and real estate resulted in a portfolio that outperformed share indices in terms of both return and risk. These findings add further support to the importance of even a somewhat naive 'buy-and-hold' asset allocation strategy.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

flexible-weightings approach
an asset allocation plan in which weights for each asset category are adjusted periodically on the basis of market analysis.

Flexible Weightings The **flexible-weightings approach** involves periodic adjustment of the weights for each asset category on the basis of market analysis. The use of a flexible-weighting scheme is often called *strategic asset allocation*. For example, the initial and new allocation based on a flexible-weighting scheme may be as follows.

Category	Initial Allocation	New Allocation
Shares	30%	45%
Bonds	40	40
Foreign securities	15	10
Short-term securities	15	5
Total portfolio	100%	100%

A change from the initial to the new allocation would be triggered by shifts in market conditions or expectations. For example, the new allocation shown above may have resulted from an anticipated decline in inflation. That decline would be expected to result in increased domestic shares and bond prices and a decline in foreign and short-term security returns. The weightings were therefore changed to capture greater returns in a changing market.

tactical asset allocation
an asset allocation plan that uses share-index futures and bond futures to change a portfolio's asset allocation on the basis of forecast market behaviour.

Tactical Asset Allocation The third approach, **tactical asset allocation**, is a form of market timing that uses share-index futures and bond futures (see Chapter 15) to change a portfolio's asset allocation. When shares are forecast to be less attractive than bonds, this strategy involves selling share-index futures and buying bond futures. Conversely, when bonds are forecast to be less attractive than shares, the strategy results in buying share-index futures and selling bond futures. Because this sophisticated technique relies on a large portfolio and the use of quantitative models for market timing, it is generally appropriate only for large institutional investors.

Asset Allocation Alternatives Assuming the use of a fixed-weight asset allocation plan and using, say, four asset categories, we can demonstrate three asset allocations. Table 13.1 shows allocations in each of four categories for conservative (low-return/low-risk), moderate (average-return/average-risk) and aggressive (high-return/high-risk) portfolios. The conservative allocation relies heavily on bonds and short-term securities to provide predictable returns. The moderate allocation consists largely of shares and bonds and includes more foreign securities and fewer short-term securities than the conservative allocation. Its moderate risk–return behaviour reflects a move away from safe, short-term securities to a larger dose of shares and foreign securities. Finally, in the aggressive allocation, more dollars are invested in shares, fewer in bonds, and more in foreign securities, thereby generally increasing the expected portfolio return and risk.

TABLE 13.1 Alternative Asset Allocations

	Allocation Alternative		
Category	Conservative (Low-Return/Low-Risk)	Moderate (Average-Return/Average-Risk)	Aggressive (High-Return/High-Risk)
Shares	15%	30%	40%
Bonds	45	40	30
Foreign securities	5	15	25
Short-term securities	35	15	5
Total portfolio	100%	100%	100%

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Applying Asset Allocation An asset allocation plan should consider the economic outlook and your investments, savings and spending patterns, tax situation, return expectations and risk tolerance. Such plans must be formulated for the long run and must stress capital preservation. You also must periodically revise the plan to reflect changing investment goals. Generally, to decide on the appropriate asset mix, you must evaluate each asset category in terms of current return, growth potential, safety, liquidity, transaction costs (brokerage fees) and potential tax savings.

Often portfolio investors are grouped into defensive (conservative—low risk) and growth (aggressive—high risk) categories. To illustrate how this might impact on asset allocation, five investor portfolio positions (on a scale of defensive to growth) are shown in Table 13.2, as well as a possible asset allocation strategy for each position.

asset allocation fund
a managed fund that spreads investors' money across shares, bonds and money market securities.

Many investors use managed funds (see Chapter 12) as part of their asset allocation activities, to diversify within each asset category. Or, as an alternative to constructing your own portfolio, you can buy shares in an **asset allocation fund**—a managed fund that seeks to reduce variability of returns by investing in the right assets at the right time. These funds, like all asset allocation schemes, emphasise diversification. They perform at a relatively consistent level by passing up the potential for spectacular gains in favour of predictability. Some asset allocation funds use fixed weightings, whereas others have flexible weights that change within prescribed limits. As a rule, investors with more than about $100 000 to invest and adequate time can justify do-it-yourself asset allocation. Those with between $25 000 and $100 000 and adequate time can use managed funds to create a workable asset allocation. Those with less than $25 000 or with limited time may find asset allocation funds most attractive. And remember to check the fees and performance ratings of these funds.

Most importantly, you should recognise that to be effective an asset allocation scheme *must be designed for the long haul*. Develop an asset allocation scheme you can live with for at least seven to 10 years, and perhaps longer. Once you have it set, stick with it. The key to success is remaining faithful to your asset allocation; that means fighting the temptation to wander.

TABLE 13.2 Investor Asset Allocation

Portfolio	Asset Type (%)		Asset Allocation (%)				
Position	Defensive	Growth	Cash	Fixed Interest	Aust. Shares	Int. Shares	Property
1	100	0	40	60	0	0	0
2	70	30	30	40	15	10	5
3	50	50	20	30	25	15	10
4	30	70	10	20	40	20	10
5	0	100	0	0	60	30	10

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

13.1 What role, if any, do an investor's personal characteristics play in determining portfolio policy? Explain.

13.2 What role do an investor's portfolio objectives play in constructing a portfolio?

13.3 What is *asset allocation*? How does it differ from diversification? What role does asset allocation play in constructing an investment portfolio?

13.4 Briefly describe the three basic approaches to asset allocation: (a) fixed weightings, (b) flexible weightings, and (c) tactical asset allocation.

13.5 What role could an *asset allocation plan* play? What makes an asset allocation scheme effective?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Evaluating the Performance of Individual Investments

LG 2

Imagine that one of your most important personal goals is to have accumulated $20 000 of savings three years from now in order to make the downpayment on your first unit. You project that the desired unit will cost $100 000 and that the $20 000 will be sufficient to make a 15% downpayment and pay the associated legal costs. Your calculations indicate that you can achieve this goal by investing existing savings plus an additional $200 per month over the next three years in an investment earning 12% per year. Projections of your earnings over the three-year period indicate that you should just be able to set aside the needed $200 per month. You consult with an investment adviser who leads you to believe that under his management, the 12% return can be achieved.

It seems simple: give the adviser your existing savings, send him $200 each month over the next 36 months, and at the end of that period, you will have the $20 000 needed to purchase the unit. Unfortunately, there are many uncertainties involved. What if you don't set aside $200 each month? What if it fails to earn the needed 12% annual return? What if in three years the desired unit costs more than $100 000? Clearly, you must do more than simply devise what appears to be a feasible plan for achieving a future goal. Rarely are you guaranteed that your planned investment and portfolio outcomes will actually occur. Therefore, it is important to assess periodically your progress towards achieving your investment goals.

As actual outcomes occur, you must compare them to the *planned* outcomes and make any necessary alterations in your plans—or in your goals. Knowing how to measure investment performance is therefore crucial. Here we will emphasise measures suitable for analysing investment performance. We begin with sources of data.

Obtaining the Necessary Data

The first step in analysing investment returns is gathering data that reflect the actual performance of each investment. As pointed out in Chapter 3, many sources of investment information are available, both online and in print. The *Australian Financial Review* and Yahoo!7 Finance, for example, contain numerous items of information useful in assessing the performance of securities. The same type of information that you use to *make* an investment decision you also use to *evaluate* investment performance. Two key areas to stay informed about are (1) returns on owned investments and (2) economic and market activity.

Return Data The basic ingredient in analysing investment returns is current market information, such as daily price quotations for shares and bonds. Investors often maintain logs or spreadsheets that contain the cost of each investment, as well as dividends, interest and other sources of income received. By regularly recording price and return data, you can create an ongoing record of price fluctuations and cumulative returns. You should also monitor corporate earnings and dividends, which will affect a company's share price. The two sources of investment return—current income and capital gains—must of course be combined to determine total return. Later in this chapter we will demonstrate use of the techniques presented in Chapter 4 to measure some popular investment vehicles.

Economic and Market Activity Changes in the economy and market will affect returns—both the level of current income and the market value of an investment. The astute investor keeps abreast of international, national, and local economic and market developments. By following economic and market changes, you should be able to assess their potential impact on returns. As economic and market conditions change, you must

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

be prepared to make revisions in the portfolio. In essence, being a knowledgeable investor will improve your chances of generating a profit (or avoiding a loss).

Indices of Investment Performance

In measuring investment performance, it is often worthwhile to compare your returns with broad-based market measures. Indices useful for the analysis of shares include the Standard & Poor's Composite Index (S&P 200) and the ASX (100/300) indices. (Detailed discussions of these averages and indices can be found in Chapter 3.) Although the ASX 100 is widely cited by the news media, it is *not* considered the most appropriate comparative gauge of share price movement, because of its narrow coverage. If your portfolio is composed of a broad range of shares, the ASX 300 Index is probably a more appropriate tool.

A number of indicators are also available for assessing the general behaviour of the fixed-income securities and bond markets. These indicators consider either yield or price behaviour. Yield data reflect the rate of return one would earn on a security purchased today and held to maturity. Popular sources of these data include the *Australian Financial Review,* Yahoo!7 Finance and the Reserve Bank.

Indices of bond price and bond yield performance can be obtained for specific types of bonds (corporate, state, Treasury), as well as on a composite basis. In addition, indices reported in terms of *total returns* are available for both shares and bonds. They combine dividend/interest income with price behaviour (capital gain or loss) to reflect total return.

Investors frequently use commercial indices to assess the general behaviour of bond managed funds. These indices are available for various types of equity and bond funds. Morningstar provides ratings for popular bond managed funds in Australia. For most other types of funds, no widely published index or average is produced. A few other indices cover listed options and futures.

Measuring the Performance of Investments

To monitor an investment portfolio, investors need reliable techniques for consistently measuring the performance of each investment in the portfolio. In particular, the holding period return (HPR) measure, first presented in Chapter 4, can be used to determine *actual* return performance. HPR is an excellent way to assess actual return behaviour, because it captures *total return* performance. It is most appropriate for holding or assessment periods of one year or less. Total return, in this context, includes the periodic cash income from the investment as well as price appreciation (or loss), whether realised or unrealised. To calculate returns for periods of more than a year, you can use yield (internal rate of return), which recognises the time value of money. Yield can be calculated using the techniques described in Chapter 4 (pages 98–101). Because the following discussions centre on the *annual* assessment of return, we will use HPR as the measure of return.

The formula for HPR, presented in Chapter 4 (Equation 4.4, page 97) and applied throughout this chapter, is restated in Equation 13.1:

Equation 13.1

$$\text{Holding period return} = \frac{\text{Current income during period} + \text{Capital gain (or loss) during period}}{\text{Beginning investment value}}$$

Equation 13.1a

$$HPR = \frac{C + CG}{V_0}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

where

Equation 13.2

$$\text{Capital gain (or loss) during period} = \text{Ending investment value} - \text{Beginning investment value}$$

Equation 13.2a

$$CG = V_n - V_0$$

Shares and Bonds There are several measures of investment return for shares and bonds. *Dividend yield*, discussed in Chapter 6, measures the current yearly dividend return earned from a share investment. It is calculated by dividing a share's yearly cash dividend by its price. The *current yield* and *yield-to-maturity* (promised yield) for bonds, analysed in Chapter 11, capture various components of return but do not reflect actual total return. The *holding period return* method *measures the total return (income plus change in value) actually earned on an investment over a given investment period*. We will use HPR, with a holding period of approximately one year, in the illustrations that follow.

Shares The HPR for ordinary and preference shares includes both cash dividends received and any price change in the security during the period of ownership. Table 13.3 illustrates the HPR calculation. Assume you purchased 1000 shares of National Corporation in May 2010 at a cost of $27 312 (including commissions). After holding the shares for just over one year, you sold it, reaping proceeds of $32 040. In addition to the $4728 capital gain on the sale, you also received $2000 in cash dividends. Thus, the calculated HPR is 24.63%.

This HPR was calculated without consideration for income taxes paid on the dividends and capital gain. Because many investors are concerned with both pre-tax and after-tax rates of return, it is useful to calculate an after-tax HPR. For tax purposes investors receiving dividends from a company whose profits arise from Australian operations have to factor in the franking credits attached to the dividends as well as net capital gains when shares are realised. The impact of franking credits is shown in Table 13.4.

Bonds The HPR for a bond investment is similar to that for shares. The calculation holds for both straight debt and convertible issues. It includes the two components of a bond investor's return: interest income and capital gain or loss.

Calculation of the HPR on a bond investment is illustrated in Table 13.5. Assume you purchased Brewing Company bonds for $10 000, held them for just over one year, and then realised $9704 at their sale. In addition, you earned $1000 in interest during the year. The HPR of this investment is 7.04%. The HPR is lower than the bond's current yield of 10% ($1000 interest ÷ $10 000 purchase price) because the bonds were sold at a capital loss.

TABLE 13.3 Calculation of Pre-tax HPR on Shares

Security: National Corporation
Date of purchase: 1 May 2010
Purchase cost: $27 312
Date of sale: 7 May 2011
Sale proceeds: $32 040
Dividends received (May 2010 to May 2011): $2000

$$\text{Holding period return} = \frac{\$2000 + (\$32\,040) - \$27\,312)}{\$27\,312}$$

$$= \underline{\$24.63\%}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 13.4 Dividend Impact

	Fully Franked	Unfranked
Income		
Dividend	$700	$700
Franking credits	$300	—
Total	**$1000**	**$700**
Tax		
Tax payable at 46.5% (with Medicare Levy)	$465	$325.50
Less franking credits	–$300	—
Net tax payable	$165	$325.50
Result		
Income after tax	$535	$374.50

TABLE 13.5 Calculation of Pre-tax HPR on a Bond

Security: Brewing Company 10% bonds
Date of purchase: 2 June 2010
Purchase cost: $10 000
Date of sale: 5 June 2011
Sale proceeds: $9704
Interest earned (June 2010 to June 2011): $1000

$$\text{Holding period return} = \frac{\$1000 + (\$9704 - \$10\,000)}{\$10\,000}$$
$$= \underline{\$7.04\%}$$

INVESTOR FACTS

BAD RECORDS?— You sold a share this year and need to calculate your capital gain for tax purposes, but you suddenly realise you didn't keep good records. What do you do? Your best bet is to make a good-faith effort to come up with a probable cost. Ask your brokerage firm to dig into its records. If you had CHESS holding statements, look for its date of issuance and assume that the purchase date was about a month before that. If you know the approximate purchase date, you can look up old share prices in newspapers at the library or on a website such as <http://au.finance.yahoo.com>. Then send the ATO a letter documenting your search; chances are that they will be understanding. Finally, resolve to keep better records in the future.

Managed Funds The two basic components of return from a managed fund investment are dividend income (including any capital gains distribution) and change in value. The basic HPR equation for managed funds is identical to that for shares.

Table 13.6 presents a holding period return calculation for a managed fund. Assume you purchased 1000 units of the fund in July 2010 at a net asset value (NAV) of $10.40 per share. Because no commission was charged, your cost was $10 400. During the one-year period of ownership, the Falls Managed Fund distributed investment income dividends totalling $270 and capital gains dividends of $320. You redeemed (sold) this fund at an NAV of $10.79 per unit, thereby realising $10 790. As seen in Table 13.6, the pre-tax holding period return on this investment is 9.42%.

Managed funds, because of complex holdings, assist their investors with calculating their tax liability on distributions comprising dividends and capital gains and losses. They supply investors an annual statement (aligned with sections of their taxation return form) which shows the tax status and amounts that investors must include under dividends and capital gains when completing their tax return.

Options and Futures The only source of return on options and futures is capital gains. To calculate a holding period return for an investment in a call option, for instance, you use the basic HPR formula, but you would set current income equal to zero. If you purchased a call on 100 shares of AWE Ltd

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 13.6 Calculation of Pre-tax HPR on a Managed Fund

Security: Falls Managed Fund
Date of purchase: 1 July 2010
Purchase cost: $10 400
Date of redemption: 3 July 2011
Sale proceeds: $10 790
Distributions received (July 2010 to July 2011)
Investment income dividends: $270
Capital gains dividends: $320

$$\text{Holding period return} = \frac{(\$270 + \$320) + (\$10\,790 - \$10\,400)}{\$10\,400}$$

$$= \underline{\underline{9.42\%}}$$

for $325 and sold the contract for $385 after holding it for just over 12 months, the pre-tax holding period return would be 18.46%. This is simply sales proceeds ($385) minus cost ($325) divided by cost. The gain would be included in the investor's capital gain (net) for the tax year and taxed at the investor's tax bracket.

The HPRs of futures are calculated in a similar fashion. Because the return is in the form of capital gains only, the HPR analysis can be applied to any investment on a pre-tax or an after-tax basis. (The same basic procedure is used for securities that are sold short.)

Comparing Performance to Investment Goals

After computing an HPR (or yield) on an investment, you should compare it to your investment goal. Keeping track of an investment's performance will help you decide which investments you should continue to hold and which you might want to sell. Clearly, an investment would be a candidate for sale under the following conditions: (1) the investment failed to perform up to expectations and no real change in performance is anticipated, (2) it has met the original investment objective, and (3) better investment outlets are currently available.

Balancing Risk and Return We have frequently discussed the basic tradeoff between investment risk and return: to earn more return, you must take more risk. In analysing an investment, the key question is, 'Am I getting the proper return for the amount of investment risk I am taking?'

Non-government security investments are by nature riskier than government bonds or bank cash deposit accounts. This implies that *a rational investor should invest in these riskier assets only when the expected rate of return is well in excess of what could have been earned from a low-risk investment*. Thus, one benchmark against which to compare investment returns is the rate of return on low-risk investments. If one's risky investments are outperforming low-risk investments, they are obtaining extra return for taking extra risk. If they are not outperforming low-risk investments, you should carefully re-examine your investment strategy.

Isolating Problem Investments It is best to analyse each investment in a portfolio periodically. For each, you should consider two questions: first, has it performed in a manner that could reasonably be expected? Second, if you didn't currently own it, would you buy it today? If the answers to both are negative, then the investment

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

probably should be sold. A negative answer to one of the questions qualifies the investment for the 'problem list'. A *problem investment* is one that has not lived up to expectations. It may be a loss situation or an investment that has provided a return less than you expected. Many investors try to forget about problem investments, hoping the problem will go away or the investment will turn itself around. This is a mistake. Problem investments require immediate attention, not neglect. In studying a problem investment, the key question is, 'Should I take my loss and get out, or should I hang on and hope it turns around?'

Superannuation (SMSFs) and Portfolios

In Australia over $1.25 trillion was invested in superannuation funds (31 December 2009) and around $385 billion was invested in self-managed super funds (SMSFs), the largest sector of the superannuation industry. Individuals use SMSFs to construct their own portfolio of assets allowing them to have more control, more flexibility, less fees and normally a better performance than industry and retail super funds. To operate an SMSF, annual attention has to be given to filing and compliance matters, expecially trusteeship, audit and taxation. Some trustees have their SMSF professionally administered.

All SMSFs need to adopt an asset allocation approach which will generate good returns. As for all portfolios consideration must be given to return versus risk and an investment strategy to meet the goals of the SMSF. The investment actions of trustees range across the growth and conservative spectrum. And portfolio performance must be analysed and revised periodically to keep the SMSF up to the mark. Table 13.7 shows various growth scenarios using asset performance data for the 30 years ending

TABLE 13.7 Asset Returns and Growth Portfolio Outcomes
Average Annual Return and Risk of Asset Classes over the Past 30 Years to 2009 (Nominal Returns)

								Diversified Portfolios		
	Aust. Shares	Aust. Bonds	Cash	Int. Shares	Int. Shares (hdgd)	Int. Bonds (hdgd)	A-REITS*	30% Growth	70% Growth	90% Growth
Average annual return (%)	14.9	10.4	8.9	12.3	12.6	11.4	12.2	11.1	12.6	13.2
Average annual risk (%)	23.6	7.1	4.2	20.8	18.4	6.6	18.3	7.3	13.5	17.0
Return/ risk** (%)	63.1	146.5	211.9	59.1	68.5	172.7	66.7	152.1	93.3	77.6

* A-REITS = Australian Real Estate Investment Trusts.
** This ratio compares the rate of return with the risk incurred in earning the return.

Assumed Asset Allocations for Diversified Options (%)

	30% Growth	70% Growth	90% Growth		30% Growth	70% Growth	90% Growth
Aust. shares	15	32	42	Int. shares (hdgd)	0	10	20
Aust. bonds	25	15	7	Int. bonds	15	10	0
Cash	30	5	3	A-REITS	5	8	8
Int. shares	10	20	20	TOTAL	100	100	100

(*Source: Smart Investor*, 'SMSF Guide', May 2010, p. 16. Courtesy of the *Australian Financial Review*.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

December 2009 to illustrate performance outcomes with three different growth portfolios. As shown, average annual returns for a 30% growth portfolio are accompanied by the lowest average annual risk.

The lessons on portfolio management in this chapter are important to SMSF trustees.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

13.6 Why is it important to continuously manage and control your portfolio?

13.7 What role does current market information play in analysing investment returns? How do changes in economic and market activity affect investment returns? Explain.

13.8 Which indices can you use to compare your investment performance to general market returns?

13.9 What are indicators of bond market behaviour and how are they different from share market indicators?

13.10 Briefly discuss *holding period return (HPR)* and *yield* as measures of investment return. Are they equivalent? Explain.

13.11 Distinguish between the types of dividend distributions that managed funds make. Are these dividends the only source of return for a managed fund investor? Explain.

13.12 Under what three conditions would an investment holding be a candidate for sale? What must be true about the expected return on a risky investment, when compared with the return on a low-risk investment, to cause a rational investor to acquire the risky investment? Explain.

13.13 What is a *problem investment*? What two questions should one consider when analysing each investment in a portfolio?

Assessing Portfolio Performance

LG3 LG4

active portfolio management building a portfolio using traditional and modern approaches and managing and controlling it to achieve its objectives; a worthwhile activity that can result in superior returns.

A portfolio can be either passively or actively built and managed. A *passive portfolio* results from buying and holding a well-diversified portfolio over the given investment horizon. An *active portfolio* is built using the traditional and modern approaches presented in Chapter 5 and is managed and controlled to achieve its stated objectives. Passive portfolios may at times outperform equally risky active portfolios. But evidence suggests that **active portfolio management** can result in superior returns. Many of the ideas presented in this text are consistent with the belief that active portfolio management will improve your chance of earning superior returns.

Once you have built a portfolio, the first step in active portfolio management is to assess performance on a regular basis and use that information to revise the portfolio as needed. Calculating the portfolio return can be tricky. The procedures used to assess portfolio performance are based on many of the concepts presented earlier in this chapter. Here we will demonstrate how to assess portfolio performance, using a hypothetical securities portfolio over a one-year holding period. We will examine each of three measures that can be used to compare a portfolio's return with a risk-adjusted, market-adjusted rate of return.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Measuring Portfolio Return

Table 13.8 presents the investment portfolio, as of 1 January 2011, of Bob Hathaway. He is a 50-year-old widower, whose children are married. His income is $60 000 per year. His primary investment objective is long-term growth with a moderate dividend return. He selects shares with two criteria in mind: quality and growth potential. On 1 January 2011 his portfolio consisted of 10 issues, all of good quality. Hathaway has been fortunate in his selection process: he has approximately $74 000 in unrealised price appreciation in his portfolio. During 2011, he decided to make a change in the portfolio. On 7 May he sold 1000 shares of National Corporation for $32 040. The holding period return for that same issue was discussed earlier in this chapter (see Table 13.3). Using proceeds from the National sale, he acquired an additional 1000 shares of Southcoast Banks on 10 May, because he liked the prospects for the bank. Southcoast is based in one of the fastest growing regions in the country.

INVESTOR FACTS

DIVIDENDS COUNT!— Historically, dividends have made a significant contribution to investor returns and have helped investors beat inflation. High-dividend shares may not outperform the market, but they continue to reward investors year after year, regardless of share prices. Income-seeking investors look to dividends to 'guarantee' some measure of return. Investors can also find some of the highest dividend yields among Australia's largest listed companies. In February 2010 some of the best were Telstra 8.2%, AMP 5.9%, Amcor 5.5% and NAB 5.3%.

Measuring the Amount Invested Every investor would be well advised to list his or her holdings periodically, as is done in Table 13.8. The table shows number of shares, acquisition date, cost and current value for each issue. These data aid in continually formulating strategy decisions. The cost data, for example, are used to determine the amount invested. Hathaway's portfolio does not utilise the leverage of a margin account. Were leverage present, all return calculations would be based on the investor's *equity* in the account. (Recall from Chapter 2 that an investor's equity in a margin account equals the total value of all the securities in the account minus any margin debt.)

To measure Hathaway's return on his invested capital, we need to calculate the one-year holding period return. His invested capital as of 1 January 2011 is $324 000. He made no new additions of capital in the portfolio during 2011, although he sold National and used the proceeds to buy Southcoast Banks.

Measuring Income There are two sources of return from a portfolio of shares: income and capital gains. Current income is realised from dividends or, for bonds, is earned in the form of interest. Investors must report taxable dividends and interest on income tax returns. Many investors maintain logs to keep track of dividend and interest income as it is received.

TABLE 13.8 Bob Hathaway's Portfolio (1 January 2011)

Number of Shares	Company	Date Acquired	Total Cost (including commission)	Cost per Share	Current Price per Share	Current Value
1000	West Ltd	16/1/09	$ 21 610	$21.61	$30	$ 30 000
1000	National Corporation	01/5/10	27 312	27.31	29	29 000
1000	Dator Ltd	13/4/05	13 704	13.70	27	27 000
500	Excelsior Ltd	16/8/08	40 571	81.14	54	27 000
1000	Southcoast Banks	16/12/08	17 460	17.46	30	30 000
1000	Pacific Ltd	27/9/08	22 540	22.54	26	26 000
1000	Ronson Ltd	27/2/08	19 100	19.10	47	47 000
500	Northwest Mining	17/4/09	25 504	51.00	62	31 000
1000	Rawland Petroleum	12/3/09	24 903	24.90	30	30 000
1000	Vornox	16/4/09	37 120	37.12	47	47 000
	Total		$249 824			$324 000

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Table 13.9 lists Hathaway's dividends for 2011. He received two quarterly dividends of $0.45 per share before he sold National. He also received two $0.32-per-share quarterly dividends on the additional Southcoast Banks shares he acquired. His total dividend income for 2011 was $10 935.

TABLE 13.9 Dividend Income on Hathaway's Portfolio (Calendar Year 2011)

Number of Shares	Company	Annual Dividend per Share	Dividends Received
1000	West Ltd	$1.20	$1 200
1000	National Corporation*	1.80	900
1000	Dator Ltd	1.12	1 120
500	Excelsior Ltd	2.00	1 000
2000	Southcoast Banks**	1.28	1 920
1000	Pacific Ltd	1.10	1 100
1000	Ronson Ltd	—	—
500	Northwest Mining	2.05	1 025
1000	Rawland Petroleum	1.20	1 200
1000	Vornox	1.47	1 470
	Total		$10 935

*Sold 7 May 2011.
**1000 shares acquired on 10 May 2011.

Measuring Capital Gains Table 13.10 shows the unrealised gains in value for each of the issues in the Hathaway portfolio. The 1 January 2011 and 31 December 2011 values are listed for each issue except the additional shares of Southcoast Banks. The amounts listed for Southcoast Banks reflect the fact that 1000 additional shares were acquired on 10 May 2011 at a cost of $32 040. Hathaway's current holdings had beginning-of-year values of $327 040 (including the additional Southcoast Banks shares at the date of purchase) and are worth $356 000 at year-end.

During 2011, the portfolio increased in value by 8.9%, or $28 960, in unrealised capital gains. In addition, Hathaway realised a capital gain in 2011 by selling his National holding. From 1 January 2011 until its sale on 7 May 2011, the National holding rose in value from $29 000 to $32 040. This was the only sale in 2011, so the

TABLE 13.10 Unrealised Gains in Value of Hathaway's Portfolio (1 January 2011 to 31 December 2011)

Number of Shares	Company	Market Value (1/1/11)	Market Price (31/12/11)	Market Value (31/12/11)	Unrealised Gain (Loss)	Percentage Change
1000	West Ltd	$ 30 000	$27	$ 27 000	($ 3 000)	–10.0%
1000	Dator Ltd	27 000	36	36 000	9 000	33.3
500	Excelsior Ltd	27 000	66	33 000	6 000	22.2
2000	Southcoast Banks*	62 040	35	70 000	7 960	12.8
1000	Pacific Ltd	26 000	26	26 000	—	—
1000	Ronson Ltd	47 000	55	55 000	8 000	17.0
500	Northwest Mining	31 000	60	30 000	(1 000)	–3.2
1000	Rawland Petroleum	30 000	36	36 000	6 000	20.0
1000	Vornox	47 000	43	43 000	(4 000)	–8.5
	Total	$327 040**		$356 000	$28 960	8.9%

*1000 additional shares acquired on 10 May 2011, at a cost of $32 040. The value listed is the cost plus the market value of the previously owned shares as of 1 January 2011.
**This total includes the $324 000 market value of the portfolio on 1 January 2011 (from Table 13.8) plus the $3040 *realised* gain on the sale of the National Corporation shares on 7 May 2011. The inclusion of the realised gain in this total is necessary to calculate the *unrealised* gain on the portfolio during 2011.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

total *realised* gain was $3040. During 2011, the portfolio had both a realised gain of $3040 and an unrealised gain of $28 960. The total gain in value equals the sum of the two: $32 000. Put another way, Hathaway neither added nor withdrew capital over the year. Therefore, the total capital gain is simply the difference between the year-end market value (of $356 000, from Table 13.10) and the value on 1 January (of $324 000, from Table 13.8). This, of course, amounts to $32 000. Of that amount, for tax purposes, only $3040 is considered realised.

Measuring the Portfolio's Holding Period Return We use the holding period return (HPR) to measure the total return on the Hathaway portfolio during 2011. The basic one-year HPR formula for portfolios appears below.

Equation 13.3

$$\text{Holding period return for a portfolio} = \frac{\text{Dividends and interest received} + \text{Realised gain} + \text{Unrealised gain}}{\text{Initial equity} + \left(\text{New funds} \times \frac{\text{Number of months in portfolio}}{12}\right) - \left(\text{Withdrawn funds} \times \frac{\text{Number of months withdrawn from portfolio}}{12}\right)}$$

Equation 13.3a

$$HPR_p = \frac{C + RG + UG}{E_0 + \left(NF \times \frac{ip}{12}\right) - \left(WF \times \frac{wp}{12}\right)}$$

This formula includes both the realised gains (income plus capital gains) and the unrealised yearly gains of the portfolio. Portfolio additions and deletions are time-weighted for the number of months they are in the portfolio.

Table 13.10 lays out in detail the portfolio's change in value: it lists all the issues that are in the portfolio as of 31 December 2011, and calculates the unrealised gain during the year. The beginning and year-end values are included for comparison purposes. The crux of the analysis is the HPR calculation for the year, presented in Table 13.11. All the

TABLE 13.11 Holding Period Return Calculation on Hathaway's Portfolio (1 January 2011 to 31 December 2011 holding period)

Data	Value
Portfolio value (1/1/11):	$324 000
Portfolio value (31/12/11):	$356 000
Realised appreciation (1/1/11 to 7/5/11 when National Corporation was sold):	$3 040
Unrealised appreciation (1/1/11 to 31/12/11):	$28 960
Dividends received:	$10 935
New funds invested or withdrawn:	None

Portfolio HPR Calculation

$$HPR_p = \frac{\$10\,935 + \$3040 + \$28\,960}{\$324\,000} = \underline{13.25\%}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

elements of a portfolio's return are included. Dividends total $10 935 (from Table 13.9). The realised gain of $3040 represents the increment in value of the National holding from 1 January 2011 until its sale. During 2011 the portfolio had a $28 960 unrealised gain (from Table 13.10). There were no additions of new funds, and no funds were withdrawn. Utilising Equation 13.3 for HPR, we find that the portfolio had a total return of 13.25% in 2011.

Comparison of Return with Overall Market Measures

Bob Hathaway can compare the HPR figure for his portfolio with market measures such as share indices. This comparison will show how his portfolio is doing in relation to the sharemarket as a whole. The S&P 200 and 300 and ASX 200 and 300 indices are acceptable to represent the sharemarket as a whole. Assume that during 2011, the return on the S&P 300 Index was 10.75% (including both dividends and capital gains). The return from Hathaway's portfolio was 13.25%, which compares very favourably with the broadly based index. The Hathaway portfolio performed about 23% better than the broad indicator of share market return.

Such a comparison factors out general market movements, but *it fails to consider risk*. Clearly, a raw return figure, such as this 13.25%, requires further analysis. A number of risk-adjusted, market-adjusted rate-of-return measures are available for use in assessing portfolio performance. Here we'll discuss three of the most popular—Sharpe's measure, Treynor's measure and Jensen's measure—and demonstrate their application to Hathaway's portfolio.

Sharpe's measure
a measure of portfolio performance that gives the risk premium per unit of total risk, which is measured by the portfolio's standard deviation of return.

Sharpe's Measure

Sharpe's measure of portfolio performance, developed by William F. Sharpe, compares the risk premium on a portfolio to the portfolio's standard deviation of return. The risk premium on a portfolio is the total portfolio return minus the risk-free rate. Sharpe's measure can be expressed as the following formula:

Equation 13.4

$$\text{Sharpe's measure} = \frac{\text{Total portfolio return} - \text{Risk-free rate}}{\text{Portfolio standard deviation of return}}$$

Equation 13.4a

$$SM = \frac{r_p - R_F}{s_p}$$

This measure allows the investor to assess the *risk premium per unit of total risk*, which is measured by the portfolio standard deviation of return.

Assume the risk-free rate, R_F, is 7.50% and the standard deviation of return on Hathaway's portfolio, s_p, is 16%. The total portfolio return, r_p, which is the HPR for Hathaway's portfolio calculated in Table 13.11 (on page 440), is 13.25%. Substituting those values into Equation 13.4, we get Sharpe's measure, SM_p.

$$SM_p = \frac{13.25\% - 7.50\%}{16\%} = \frac{5.75\%}{16\%} = \underline{\underline{0.36}}$$

Sharpe's measure is meaningful when compared either to other portfolios or to the market. In general, the higher the value of Sharpe's measure, the better—the higher the risk premium per unit of risk. If we assume that the market return, r_m, is currently

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

10.75% and the standard deviation of return for the market portfolio, s_{pm}, is 11.25%, Sharpe's measure for the market, SM_m, is

$$SM_m = \frac{10.75\% - 7.50\%}{11.25\%} = \frac{3.25\%}{11.25\%} = \underline{\underline{0.29}}$$

Because Sharpe's measure of 0.36 for Hathaway's portfolio is greater than the measure of 0.29 for the market portfolio, Hathaway's portfolio exhibits superior performance. Its risk premium per unit of risk is above that of the market. Had Sharpe's measure for Hathaway's portfolio been below that of the market (below 0.29), the portfolio's performance would be considered inferior to the market performance.

Treynor's measure
a measure of portfolio performance that gives the risk premium per unit of non-diversifiable risk, which is measured by the portfolio's beta.

Treynor's Measure Jack L. Treynor developed a portfolio performance measure similar to Sharpe's measure. **Treynor's measure** uses the portfolio beta to measure the portfolio's risk. Treynor therefore focuses only on *non-diversifiable risk*, assuming that the portfolio has been built in a manner that diversifies away all diversifiable risk. (In contrast, Sharpe focuses on *total risk*.) Treynor's measure is calculated as shown in Equation 13.5.

Equation 13.5

$$\text{Treynor's measure} = \frac{\text{Total portfolio return} - \text{Risk-free rate}}{\text{Portfolio beta}}$$

Equation 13.5a

$$TM = \frac{r_p - R_F}{b_p}$$

This measure gives the *risk premium per unit of non-diversifiable risk*, which is measured by the portfolio beta.

Using the data for the Hathaway portfolio presented earlier and assuming that the beta for Hathaway's portfolio, b_p, is 1.20, we can substitute into Equation 13.5 to get Treynor's measure, TM_p, for Hathaway's portfolio.

$$TM_p = \frac{13.25\% - 7.50\%}{1.20} = \frac{5.75\%}{1.20} = \underline{\underline{4.79\%}}$$

Treynor's measure, like Sharpe's measure, is useful when compared either to other portfolios or to the market. Generally, the higher the value of Treynor's measure, the better—the greater the risk premium per unit of non-diversifiable risk. Again assuming that the market return, r_m, is 10.75% and recognising that, by definition, the beta for the market portfolio, b_m, is 1.00, we can use Equation 13.5 to find Treynor's measure for the market, TM_m.

$$TM_m = \frac{10.75\% - 7.50\%}{1.00} = \frac{3.25\%}{1.00} = \underline{\underline{3.25\%}}$$

The fact that Treynor's measure of 4.79% for Hathaway's portfolio is greater than the market portfolio measure of 3.25% indicates that Hathaway's portfolio exhibits superior performance. Its risk premium per unit of non-diversifiable risk is above that of the market. Had Treynor's measure for Hathaway's portfolio been below that of the market (below 3.25%), the portfolio's performance would be viewed as inferior to that of the market.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Jensen's measure (Jensen's alpha)
a measure of portfolio performance that uses the portfolio's beta and CAPM to calculate its excess return, which may be positive, zero or negative.

Jensen's Measure (Jensen's Alpha) Michael C. Jensen developed a portfolio performance measure that seems quite different from the measures of Sharpe and Treynor, yet is theoretically consistent with Treynor's measure. **Jensen's measure**, also called **Jensen's alpha**, is based on the *capital asset pricing model (CAPM)*, which was developed in Chapter 5 (see Equation 5.3 on page 147). It calculates the portfolio's *excess return*. Excess return is the amount by which the portfolio's actual return deviates from its required return, which is determined using its beta and CAPM. The value of the excess return may be positive, zero or negative. Like Treynor's measure, Jensen's measure focuses only on the *non-diversifiable*, or *relevant, risk* by using beta and CAPM. It assumes that the portfolio has been adequately diversified. Jensen's measure is calculated as shown in Equation 13.6.

Equation 13.6

$$\text{Jensen's measure} = (\text{Total portfolio return} - \text{Risk-free rate}) - [\text{Portfolio beta} \times (\text{Market return} - \text{Risk-free rate})]$$

Equation 13.6a

$$JM = (r_p - R_F) - [b_p \times (r_m - R_F)]$$

Jensen's measure indicates the difference between the portfolio's actual return and its required return. Positive values are preferred. They indicate that the portfolio earned a return in excess of its risk-adjusted, market-adjusted required return. A value of zero indicates that the portfolio earned *exactly* its required return. Negative values indicate the portfolio failed to earn its required return.

Using the data for Hathaway's portfolio presented earlier, we can substitute into Equation 13.6 to get Jensen's measure, JM_p, for Hathaway's portfolio.

$$\begin{aligned} JM_p &= (13.25\% - 7.50\%) - [1.20 \times (10.75\% - 7.50\%)] \\ &= 5.75\% - (1.20 \times 3.25\%) = 5.75\% - 3.90\% = \underline{\underline{1.85\%}} \end{aligned}$$

The 1.85% value for Jensen's measure indicates that Hathaway's portfolio earned an *excess return* 1.85 percentage points above its required return, given its non-diversifiable risk as measured by beta. Clearly, Hathaway's portfolio has outperformed the market on a risk-adjusted basis.

Note that unlike the Sharpe and Treynor measures, Jensen's measure, through its use of CAPM, automatically adjusts for the market return. Therefore, there is no need to make a separate market comparison. In general, the higher the value of Jensen's measure, the better the portfolio has performed. Only those portfolios with positive Jensen measures have outperformed the market on a risk-adjusted basis. Because of its computational simplicity, its reliance only on non-diversifiable risk, and its inclusion of both risk and market adjustments, Jensen's measure (alpha) tends to be preferred over those of Sharpe and Treynor for assessing portfolio performance.

INVESTOR FACTS

TIME TO REVISE YOUR PORTFOLIO?— Over time, you will need to review your portfolio to ensure that it reflects the right risk–return characteristics for your goals and needs. Here are four good reasons to perform this task:

- A major life event—marriage, birth of a child, job loss, illness, loss of a spouse, a child finishing school—changes your investment objectives.
- The proportion of one asset class increases or decreases substantially.
- You expect to reach a specific goal within two years.
- The percentage in an asset class varies from your original allocation by 10% or more.

Portfolio Revision

In the Hathaway portfolio we have been discussing, one transaction occurred during 2011. The reason for this transaction was that Hathaway believed the Southcoast Banks had more return potential than National. You should periodically analyse your portfolio with one basic question in mind: 'Does this portfolio continue to meet my needs?' In other words, does the portfolio contain those issues that are best suited to your risk–return needs? Investors who

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

portfolio revision
the process of selling certain issues in a portfolio and purchasing new securities to replace them.

systematically study the issues in their portfolios will occasionally find a need to sell certain issues and purchase new securities to replace them. This process is commonly called **portfolio revision**. As the economy evolves, certain industries and shares become either less or more attractive as investments. In today's sharemarket, timeliness is the essence of profitability.

Given the dynamics of the investment world, periodic reallocation and rebalancing of the portfolio are a necessity. Many circumstances require such changes. For example, as an investor nears retirement, the portfolio's emphasis normally evolves from a strategy that stresses growth/capital appreciation to one that seeks to preserve capital. Changing a portfolio's emphasis normally occurs as an evolutionary process rather than an overnight switch. Individual issues in the portfolio often change in risk–return characteristics. As this occurs, you would be wise to eliminate those issues that do not meet your objectives. In addition, the need for diversification is constant. As issues rise or fall in value, their diversification effect may be lessened. Thus, you may need portfolio revision to maintain diversification.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

13.14 What is *active portfolio management*? Will it result in superior returns? Explain.

13.15 Describe the steps involved in measuring portfolio return. Explain the role of the portfolio's HPR in this process and explain why one must differentiate between realised and unrealised gains.

13.16 Why is comparing a portfolio's return to the return on a broad market index generally inadequate? Explain.

13.17 Briefly describe each of the following return measures available for assessing portfolio performance and explain how they are used.

a. Sharpe's measure
b. Treynor's measure
c. Jensen's measure (Jensen's alpha)

13.18 Why is Jensen's measure (alpha) generally preferred over the measures of Sharpe and Treynor for assessing portfolio performance? Explain.

13.19 Explain the role of *portfolio revision* in the process of managing a portfolio.

Timing Transactions

LG5 LG6

The essence of timing is to 'buy low and sell high'. This is the dream of all investors. Although there is no tried-and-true way to achieve such a goal, there are several methods you can utilise to time purchases and sales. First, there are formula plans, which we discuss next. Investors can also use limit and stop-loss orders as a timing aid, can follow procedures for warehousing liquidity, and can take into consideration other aspects of timing when selling their investments. For the story of one famous investor of the twentieth century, see the following Ethics in Investing box on page 445.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

ETHICS IN INVESTING

The Virtues of Ethical Investing: The Remarkable Life of John Templeton

A pioneer in financial investments, John Marks Templeton has spent a lifetime encouraging ethical behaviour. A naturalised British citizen living in Nassau, the Bahamas, Templeton was knighted by Queen Elizabeth II in 1987 for his many accomplishments. One of them was creating the $1 million-plus Templeton Prize for Progress Toward Research or Discoveries about Spiritual Realities, presented annually in London since 1973. Mother Theresa of Calcutta was its first recipient.

John Templeton was born in 1912 in a small Tennessee town. His businessman father taught him to keep a positive attitude. By the time John was four, he was raising beans in his mother's garden and selling them at a local store for profit. At the age of 12, he came upon an old, broken-down Ford, which he later purchased from a farmer for $10. With the help of friends he spent six months rebuilding it and drove it until he graduated from high school. Templeton never spent more than $200 on a car until he had a net worth of more than $250 000.

Qualities developed as a young man served Templeton well as he set out to become one of the world's greatest investors. Forced to live thriftily while paying for his own education at Yale University during the Depression, Templeton graduated in 1934 as a top scholar in his class. After graduation, he set out on a seven-month world tour to study global investment opportunities firsthand. Before leaving, John wrote to 100 investment companies about his plans and told them he would be available for hire upon his return. His efforts landed him a job on Wall Street.

When John got married, he and his wife set a goal to save 50% of their income. To make thrift a joy rather than a burden, the Templetons became avid bargain shoppers and used to compete with their friends for bargains.

Standard share-buying advice is 'buy low and sell high'. When war began in Europe in 1939, Templeton borrowed money to buy 100 shares in each of 104 companies selling at $1 a share or less, including 34 companies that were in bankruptcy. Only four turned out to be worthless, and he turned large profits on the others after holding each for an average of four years.

Taking a less-travelled route in investing, Templeton sold advice on how to invest worldwide when Americans rarely considered foreign investment. In 1954, he launched his flagship fund, Templeton Growth. Each $100 000 invested then, with distributions reinvested, grew to total $54 million in 2009. *Money* magazine named him 'arguably the greatest global share picker of the century' (January 1999). Sir John Templeton has always been a student of *free competition:* 'Competitive business has reduced costs, has increased variety, has improved quality'. And if a business is not ethical, he says, 'it will fail, perhaps not right away, but eventually'. His progressive ideas on finance, spiritual life and business ethics made him a distinctive figure in all these fields.

Critical Thinking Question What personal characteristic of John Templeton do you think made him an investing giant? Be ready to defend your answer.

(*Source:* Matthew Robinson, 'His Optimism and Drive Built a Financial Empire', *Investor's Business Daily*, 24 July 2006; and Franklin Templeton Investments, <www.franklintempleton.com> accessed September 2009.)

Formula Plans

formula plans mechanical methods of portfolio management that try to take advantage of price changes in securities that result from cyclical price movements.

dollar-cost averaging a formula plan for timing investment transactions, in which a fixed dollar amount is invested in a security at fixed intervals.

Formula plans are mechanical methods of portfolio management that try to take advantage of price changes that result from cyclical price movements. Formula plans are not set up to provide unusually high returns. Rather, they are conservative strategies employed by investors who do not wish to bear a high level of risk. We discuss four popular formula plans: dollar-cost averaging, the constant-dollar plan, the constant-ratio plan and the variable-ratio plan.

Dollar-Cost Averaging **Dollar-cost averaging** is a formula plan in which a fixed dollar amount is invested in a security at fixed time intervals. In this passive buy-and-hold strategy, the periodic dollar investment is held constant. To make the plan work, you

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

must invest on a regular basis. The goal of a dollar-cost averaging program is growth in the value of the security to which the funds are allocated. The price of the investment security will probably fluctuate over time. If the price declines, you would purchase more shares per period. Conversely, if the price rises, you would purchase fewer shares per period.

Look at the example of dollar-cost averaging in Table 13.12. The table shows investment of $500 per month in the Rine Managed Fund, a growth-oriented fund. Assume that during one year's time you have placed $6000 in the managed fund units. You made purchases at NAVs ranging from a low of $24.16 to a high of $30.19. At year-end, the value of your holdings in the fund was slightly less than $6900. Dollar-cost averaging is a passive strategy; other formula plans are more active.

constant-dollar plan
a formula plan for timing investment transactions, in which the investor establishes a target dollar amount for the speculative portion of the portfolio, and establishes trigger points at which funds are transferred to or from the conservative portion as needed to maintain the target dollar amount.

Constant-Dollar Plan A **constant-dollar plan** consists of a portfolio that is divided into two parts, speculative and conservative. The speculative portion consists of securities that have high promise of capital gains. The conservative portion consists of low-risk investments such as bonds or a money market account. The target dollar amount for the speculative portion is constant. You establish trigger points (upward or downward movement in the speculative portion) at which funds are removed from or added to that portion. The constant-dollar plan basically skims off profits from the speculative portion of the portfolio if it rises a certain percentage or amount in value and adds these funds to the conservative portion of the portfolio. If the speculative portion of the portfolio declines by a specific percentage or amount, you add funds to it from the conservative portion.

Assume that you have established the constant-dollar plan shown in Table 13.13. The beginning $20 000 portfolio consists of $10 000 invested in a high-beta fund and $10 000 deposited in a money market account. You have decided to rebalance the portfolio every time the speculative portion is worth $2000 more or $2000 less than its initial value of

TABLE 13.12 Dollar-Cost Averaging ($500 per month, Rine Managed Fund units) EXCEL WITH SPREADSHEETS

Transactions

Month	Net Asset Value (NAV) Month-End	Number of Units Purchased
January	$26.00	19.23
February	27.46	18.21
March	27.02	18.50
April	24.19	20.67
May	26.99	18.53
June	25.63	19.51
July	24.70	20.24
August	24.16	20.70
September	25.27	19.79
October	26.15	19.12
November	29.60	16.89
December	30.19	16.56

Annual Summary:

Total investment: $6000.00
Total number of units purchased: 227.95
Average cost per unit: $26.32
Year-end portfolio value: $6881.81

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 13.13 Constant-Dollar Plan

Managed Fund NAV	Value of Speculative Portion	Value of Conservative Portion	Total Portfolio Value	Transactions	Number of Units in Speculative Portion
$10.00	$10 000.00	$10 000.00	$20 000.00		1000
11.00	11 000.00	10 000.00	21 000.00		1000
12.00	12 000.00	10 000.00	22 000.00		1000
→12.00	10 000.00	12 000.00	22 000.00	Sold 166.67 units	833.33
11.00	9 166.63	12 000.00	21 166.63		833.33
9.50	7 916.64	12 000.00	19 916.64		833.33
→ 9.50	10 000.00	9 916.64	19 916.64	Purchased 219.30 units	1052.63
10.00	10 526.30	9 916.64	20 442.94		1052.63

$10 000. If the speculative portion of the portfolio equals or exceeds $12 000, you sell sufficient units of the fund to bring its value down to $10 000 and add the proceeds from the sale to the conservative portion. If the speculative portion declines in value to $8000 or less, you use funds from the conservative portion to purchase sufficient units to raise the value of the speculative portion to $10 000.

Two portfolio-rebalancing actions are taken in the time sequence illustrated in Table 13.13. Initially, $10 000 was allocated to each portion of the portfolio. When the fund's net asset value (NAV) rose to $12, the speculative portion was worth $12 000. At that point, you sold 166.67 units valued at $2000, and added the proceeds to the money market account. Later, the fund's NAV declined to $9.50 per unit, causing the value of the speculative portion to drop below $8000. This change triggered the purchase of sufficient units to raise the value of the speculative portion to $10 000. Over the long run, if the speculative investment of the constant-dollar plan rises in value, the conservative component of the portfolio will increase in dollar value as profits are transferred into it.

constant-ratio plan
a formula plan for timing investment transactions, in which a desired fixed portion of the conservative portion of the portfolio is estabished; when the actual ratio differs by a predetermined amount from the desired ratio, transactions are made to rebalance the portfolio to achieve the desired ratio.

Constant-Ratio Plan The **constant-ratio plan** is similar to the constant-dollar plan except that it establishes a desired fixed *ratio* of the speculative portion to the conservative portion of the portfolio. When the actual ratio of the two differs by a predetermined amount from the desired ratio, rebalancing occurs. At that point, you make transactions to bring the actual ratio back to the desired ratio. To use the constant-ratio plan, you must decide on the appropriate apportionment of the portfolio between speculative and conservative investments. You must also choose the ratio trigger point at which transactions occur.

To see how this works, assume that the constant-ratio plan illustrated in Table 13.14 is yours. The initial portfolio value is $20 000. You have decided to allocate 50% of the portfolio to the speculative, high-beta fund and 50% to a money market account. You will rebalance the portfolio when the ratio of the speculative portion to the conservative portion is greater than or equal to 1.20 or less than or equal to 0.80. A sequence of changes in NAV is listed in Table 13.14. Initially, $10 000 is allocated to each portion of the portfolio. When the fund NAV reaches $12, the 1.20 ratio triggers the sale of 83.33 units. Then the portfolio is back to its desired 50:50 ratio. Later, the fund NAV declines to $9, lowering the value of the speculative portion to $8250. The ratio of the speculative portion to the conservative portion is then 0.75, which is below the 0.80 trigger point. You purchase 152.78 units to bring the desired ratio back up to the 50:50 level.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 13.14 Constant-Ratio Plan

Managed Fund NAV	Value of Speculative Portion	Value of Conservative Portion	Total Portfolio Value	Ratio of Speculative Portion to Conservative Portion	Transactions	Number of Units in Speculative Portion
$10.00	$10 000.00	$10 000.00	$20 000.00	1.000		1000
11.00	11 000.00	10 000.00	21 000.00	1.100		1000
12.00	12 000.00	10 000.00	22 000.00	1.200		1000
→12.00	11 000.00	11 000.00	22 000.00	1.000	Sold 83.33 units	916.67
11.00	10 083.00	11 000.00	21 083.00	0.917		916.67
10.00	9 166.70	11 000.00	20 166.70	0.833		916.67
9.00	8 250.00	11 000.00	19 250.00	0.750		916.67
→ 9.00	9 625.00	9 625.00	19 250.00	1.000	Purchased 152.78 units	1069.44
10.00	10 694.40	9 625.00	20 319.40	1.110		1069.44

The long-run expectation under a constant-ratio plan is that the speculative securities will rise in value. When this occurs, you will sell securities to reapportion the portfolio and increase the value of the conservative portion. This philosophy is similar to the constant-dollar plan, except that it uses a ratio as a trigger point.

variable-ratio plan
a formula plan for timing investment transactions, in which the ratio of the speculative portion to the total portfolio value varies depending on the movement in value of the speculative securities; when the ratio rises or falls by a predetermined amount, the amount committed to the speculative portion of the portfolio is reduced or increased, respectively.

Variable-Ratio Plan The **variable-ratio plan** is the most aggressive of these four fairly passive formula plans. It attempts to turn sharemarket movements to the investor's advantage by timing the market. That is, it tries to 'buy low and sell high'. The ratio of the speculative portion to the total portfolio value varies depending on the movement in value of the speculative securities. When the ratio rises a certain predetermined amount, the amount committed to the speculative portion of the portfolio is reduced. Conversely, if the value of the speculative portion declines so that it drops significantly in proportion to the total portfolio value, the amount committed to the speculative portion of the portfolio is increased.

When implementing the variable-ratio plan, you have several decisions to make. First, you must determine the initial allocation between the speculative and conservative portions of the portfolio. Next, you must choose trigger points to initiate buy or sell activity. These points are a function of the ratio between the value of the speculative portion and the value of the total portfolio. Finally, you must set adjustments in that ratio at each trigger point.

Assume that you use the variable-ratio plan shown in Table 13.15. Initially, you divide the portfolio equally between the speculative and the conservative portions. The speculative portion consists of a high-beta (around 2.0) fund. The conservative portion is a money market account. You decide that when the speculative portion reaches 60% of the total portfolio, you will reduce its proportion to 45%. If the speculative portion of the portfolio drops to 40% of the total portfolio, then you will raise its proportion to 55%. The logic behind this strategy is an attempt to time the cyclical movements in the fund's value. When the fund moves up in value, you take profits, and you increase the proportion invested in the no-risk money market account. When the fund declines markedly in value, you increase the proportion of capital committed to the speculative portion.

A sequence of transactions is depicted in Table 13.15. When the fund NAV climbs to $15, the 60% ratio trigger point is reached and you sell 250 units of the fund. You place the proceeds in the money market account, which causes the speculative portion then to represent 45% of the value of the portfolio. Later, the fund NAV declines to

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 13.15 Variable-Ratio Plan

Managed Fund NAV	Value of Speculative Portion	Value of Conservative Portion	Total Portfolio Value	Ratio of Speculative Portion to Total Portfolio Value	Transactions	Number of Units in Speculative Portion
$10.00	$10 000.00	$10 000.00	$20 000.00	0.50		1000
15.00	15 000.00	10 000.00	25 000.00	0.60		1000
→15.00	11 250.00	13 750.00	25 000.00	0.45	Sold 250 units	750
10.00	7 500.00	13 750.00	21 250.00	0.35		750
→10.00	11 687.50	9 562.50	21 250.00	0.55	Purchased 418.75 units	1168.75
12.00	14 025.00	9 562.50	23 587.50	0.59		1168.75

$10, causing the speculative portion of the portfolio to drop to 35%. This triggers a portfolio rebalancing, and you purchase 418.75 units, moving the speculative portion to 55%. When the fund NAV then moves to $12, the total portfolio is worth in excess of $23 500. In comparison, had the initial investment of $20 000 been allocated equally and had no rebalancing been done between the fund and the money market account, the total portfolio value at this time would have been only $22 000 ($12 × 1000 = $12 000 in the speculative portion plus $10 000 in the money market account).

Using Limit and Stop-Loss Orders

In Chapter 3 we discussed the market order, the limit order and the stop-loss order. (See pages 70–71 to review these types of orders.) Here we will see how you can use the limit and stop-loss orders to rebalance a portfolio. These types of security orders, if properly used, can increase return by lowering transaction costs.

Limit Orders There are many ways investors can use limit orders when they buy or sell securities. For instance, if you have decided to add a share to the portfolio, a limit order to buy will ensure that you buy only at the desired purchase price or below. A limit *good-'til-cancelled (GTC)* order to buy instructs the broker to buy shares until the entire order is filled. The primary risk in using limit instead of market orders is that the order may not be executed. For example, if you placed a GTC order to buy 100 shares of State Oil at $27 per share and it never traded at $27 per share or less, the order would never be executed. Thus, you must weigh the need for immediate execution (market order) against the possibility of a better price with a limit order.

Limit orders, of course, can increase your return if they enable you to buy a security at a lower cost or sell it at a higher price. During a typical trading day, a share will fluctuate up and down over a normal trading range. For example, suppose the shares of Tama traded 10 times in the following sequence: 36.00, 35.88, 35.75, 35.94, 35.50, 35.63, 35.82, 36.00, 36.13, 36.00. A market order to sell could have been executed at somewhere between 35.50 (the low) and 36.13 (the high). A limit order to sell at 36.00 would have been executed at 36.00. Thus, $0.50 per share might have been gained by using a limit order.

Stop-Loss Orders Stop-loss orders can be used to limit the downside loss exposure of an investment. For example, assume you purchase 500 shares of East at 26.00 and have set a specific goal to sell if it reaches 32.00 or drops to 23.00. To implement this goal, you would enter a GTC stop order to sell with a price limit of 32.00 and another stop order at

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

a price of 23.00. If the issue trades at 23.00 or less, the stop-loss order becomes a market order, and the broker sells at the best price available. Or, if the issue trades at 32.00 or higher, the broker will sell. In the first situation, you are trying to reduce your losses; in the second, you are attempting to protect a profit.

whipsawing
the situation where a share temporarily drops in price and then bounces back upwards.

The principal risk in using stop-loss orders is **whipsawing**—a situation where a share temporarily drops in price and then bounces back upwards. If East dropped to 23.00, then 22.57 and then rallied back to 26.00, you would have been sold out at a price between 23.00 and 22.57. For this reason, limit orders, including stop-loss orders, require careful analysis before they are placed. You must consider the share's probable fluctuations as well as the need to purchase or sell when choosing among market, limit and stop-loss orders.

Warehousing Liquidity

Investing in risky shares or in options or futures offers probable returns in excess of those available with money market deposit accounts or bonds. However, shares and options and futures are risky investments. One recommendation for an efficient portfolio is to keep a portion of it in a low-risk, highly liquid investment to protect against total loss. The low-risk asset acts as a buffer against possible investment adversity. A second reason for maintaining funds in a low-risk asset is the possibility of future opportunities. When opportunity strikes, an investor who has extra cash available will be able to take advantage of the situation. If you have set aside funds in a highly liquid investment, you need not disturb the existing portfolio.

There are two primary media for warehousing liquidity: money market deposit accounts at financial institutions and money market managed funds. The money market accounts at savings institutions provide relatively easy access to funds and furnish returns competitive with (but somewhat lower than) money market managed funds. The products offered by financial institutions are becoming more competitive with those offered by managed funds.

Timing Investment Sales

Knowing when to sell is as important as choosing which share to buy. Periodically, you should review your portfolio and consider possible sales and new purchases. Here we discuss two issues relevant to the sale decision: tax consequences and achieving investment goals.

Tax Consequences Taxes affect nearly all investment actions. All investors can and should understand certain basics. The treatment of capital losses is important: *capital losses are offset against capital gains in the year incurred; where an overall loss results, then the loss is carried forward to the next tax year.* If you have a loss position in an investment and have concluded that it would be wise to sell it, the best time to sell is when you have a capital gain against which you can apply the loss. Clearly, one should carefully consider the tax consequences of investment sales prior to taking action.

Achieving Investment Goals Every investor would enjoy buying an investment at its lowest price and selling it at its top price. At a more realistic level, you should sell an investment when it no longer meets your needs. In particular, if an investment has become either more or less risky than is desired, or if it has not met its return objective, it should be sold. The tax consequences mentioned above help to determine the appropriate time to sell. However, *taxes are not the foremost consideration in a sale decision.* The dual concepts of risk and return should be the overriding concerns.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Be sure to take the time periodically to examine each investment in light of its return performance and relative risk. You should sell any investment that no longer belongs in the portfolio and should buy investments that are more suitable. Finally, you should not hold out for every cent of profit. Very often, those who hold out for the top price watch the value of their holdings plummet. If an investment looks ripe to sell, sell it, take the profit, reinvest it in an appropriate asset and enjoy your good fortune.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab

13.20 Explain the role that *formula plans* can play in the timing of security transactions. Describe the logic underlying the use of these plans.

13.21 Briefly describe each of the following plans and differentiate among them.

a. Dollar-cost averaging
b. Constant-dollar plan
c. Constant-ratio plan
d. Variable-ratio plan

13.22 Describe how a *limit order* can be used when securities are bought or sold. How can a *stop-loss order* be used to reduce losses? To protect profit?

13.23 Give two reasons why an investor might want to maintain funds in a low-risk, highly liquid investment.

13.24 Describe the two items an investor should consider before reaching a decision to sell an investment vehicle.

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 **Explain how to use an asset allocation scheme to construct a portfolio consistent with investor objectives.** To construct a portfolio, consider personal characteristics and establish consistent portfolio objectives such as current income, capital preservation, capital growth, tax considerations and level of risk. Asset allocation, which is the key influence on portfolio return, involves dividing the portfolio into asset classes. Asset allocation aims to protect against negative developments while taking advantage of positive ones. The basic approaches to asset allocation involve the use of fixed weightings, flexible weightings and tactical asset allocation. Asset allocation can be achieved on a do-it-yourself basis, with the use of managed funds, or by merely buying shares in an asset allocation fund.

LG 2 **Discuss the data and indices needed to measure and compare investment performance.** To analyse the performance of individual investments, gather current market information and stay abreast of international, national and local economic and market developments.

Key Terms

asset allocation, *p. 428*
asset allocation fund, *p. 430*
fixed-weightings approach, *p. 428*
flexible-weightings approach, *p. 429*
security selection, *p. 428*
tactical asset allocation, *p. 429*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
Indices of investment performance such as the ASX 300 and bond market indicators are available for use in assessing market behaviour. The performance of individual investment vehicles can be measured on both a pre-tax and an after-tax basis by using the holding period return (HPR). HPR measures the total return (income plus change in value) earned on the investment during an investment period of one year or less. HPR can be compared to investment goals to assess whether the proper return is being earned for the risk involved and to isolate any problem investments.	
LG 3 **Understand the techniques used to measure income, capital gains and total portfolio return.** To measure portfolio return, estimate the amount invested, the income earned and any capital gains (both realised and unrealised) over the relevant current time period. Using these values, calculate the portfolio's holding period return (HPR) by dividing the total returns by the amount of investment during the period. Comparison of the portfolio's HPR to overall market measures can provide some insight into the portfolio's performance relative to the market.	active portfolio management, *p. 437*
LG 4 **Use the Sharpe, Treynor and Jensen measures to compare a portfolio's return with a risk-adjusted, market-adjusted rate of return, and discuss portfolio revision.** A risk-adjusted, market-adjusted evaluation of a portfolio's return can be made using Sharpe's measure, Treynor's measure or Jensen's measure. Sharpe's and Treynor's measures find the risk premium per unit of risk, which can be compared with similar market measures to assess the portfolio's performance. Jensen's measure (alpha) calculates the portfolio's excess return using beta and CAPM. Jensen's measure tends to be preferred because it is relatively easy to calculate and directly makes both risk and market adjustments. Portfolio revision—selling certain issues and purchasing new ones to replace them—should take place when returns are unacceptable or when the portfolio fails to meet the investor's objectives.	Jensen's measure (Jensen's alpha), *p. 443* portfolio revision, *p. 444* Sharpe's measure, *p. 441* Treynor's measure, *p. 442*
LG 5 **Describe the role and logic of dollar-cost averaging, constant-dollar plans, constant-ratio plans and variable-ratio plans.** Formula plans are used to time purchase and sale decisions to take advantage of price changes that result from cyclical price movements. The four commonly used formula plans are dollar-cost averaging, the constant-dollar plan, the constant-ratio plan and the variable-ratio plan. All of them have certain decision rules or triggers that signal a purchase and/or sale action.	constant-dollar plan, *p. 446* constant-ratio plan, *p. 447* dollar-cost averaging, *p. 445* formula plans, *p. 445* variable-ratio plan, *p. 448*
LG 6 **Explain the role of limit and stop-loss orders in investment timing, warehousing liquidity and timing investment sales.** Limit and stop-loss orders can be used to trigger the rebalancing of a portfolio to contribute to improved portfolio returns. Low-risk, highly liquid investment vehicles such as money market deposit accounts and money market mutual funds can warehouse liquidity. Such liquidity can protect against total loss and allow you to seize any attractive opportunities. Investment sales should be timed to obtain maximum tax benefits (or minimum tax consequences) and to contribute to the achievement of the investor's goals.	whipsawing, *p. 450*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Discussion Questions

LG1

Q13.1 List your personal characteristics and then state your investment objectives in light of them. Use these objectives as a basis for developing your portfolio objectives and policies. Assume that you plan to create a portfolio aimed at achieving your stated objectives. The portfolio will be constructed by allocating your money to any of the following asset classes: shares, bonds, foreign securities and short-term securities.

a. Determine and justify an asset allocation to these four classes in light of your stated portfolio objectives and policies.

b. Describe the types of investments you would choose for each of the asset classes.

c. Assume that after making the asset allocations specified in part **a**, you receive a sizeable inheritance that causes your portfolio objectives to change to a much more aggressive posture. Describe the changes that you would make in your asset allocations.

d. Describe other asset classes you might consider when developing your asset allocation scheme.

LG2 LG3

Q13.2 Choose an established company whose shares are listed and actively traded on the ASX. Find the share's closing price at the end of each of the preceding six years and the amount of dividends paid in each of the preceding five years. Also, obtain the value of the ASX 300 Average at the end of each of the preceding six years.

a. Use Equation 13.1 (on page 432) to calculate the pre-tax holding period return (HPR) on the share for each of the preceding five years.

b. Study the international, national and local economic and market developments that occurred during the preceding five years.

c. Compare the share's returns to the ASX for each year over the five-year period of concern.

d. Discuss the share's returns in light of the economic and market developments noted in part **b** and the behaviour of the ASX as noted in part **c** over the five preceding years. How well did the share perform in light of these factors?

LG2 LG3

Q13.3 Select a major share, bond and managed fund in which you are interested in investing. For each of them, gather data for each of the past three years on the annual dividends or interest paid and the capital gain (or loss) that would have resulted had they been purchased at the start of each year and sold at the end of each year. For the managed fund, be sure to separate any dividends paid into investment income dividends and capital gains distributions.

a. For each of the three investment vehicles, calculate the HPR for each of the three years.

b. Use your annual HPR findings in part **a** to calculate the average HPR for each of the investment vehicles over the three-year period.

c. Compare the average returns found in part **b** for each of the investment vehicles.

LG2 LG3

Q13.4 Choose six actively traded shares for inclusion in your investment portfolio. Assume the portfolio was created three years earlier by purchasing 200 shares of each of the six shares. Find the acquisition price of each share, the annual dividend paid by each share, and the year-end prices for the three calendar years. Record for each share its total cost, cost per share, current price per share and total current value at the end of each of the three calendar years.

a. For each of the three years, find the amount invested in the portfolio.

b. For each of the three years, measure the annual income from the portfolio.

c. For each of the three years, determine the unrealised capital gains from the portfolio.

d. For each of the three years, calculate the portfolio's HPR, using the values in parts **a**, **b** and **c**.

e. Use your findings in part **d** to calculate the average HPR for the portfolio over the three-year period. Discuss your finding.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG 4

Q13.5 Find five actively traded shares and record their prices at the start and the end of the most recent calendar year. Also, find the amount of dividends paid on each during that year and each share's beta at the end of the year. Assume that the five shares were held during the year in an equal-dollar-weighted portfolio (20% in each share) created at the start of the year. Also find the current risk-free rate, R_F, and the market return, r_m, for the given year. Assume that the standard deviation for the portfolio of the five shares is 14.25% and that the standard deviation for the market portfolio is 10.80%.

a. Use the formula presented in Chapter 5 (Equation 5.1 on page 134) to find the portfolio return, r_p, for the year under consideration.

b. Calculate Sharpe's measure for both the portfolio and the market. Compare and discuss these values. On the basis of this measure, is the portfolio's performance inferior or superior? Explain.

c. Calculate Treynor's measure for both the portfolio and the market. Compare and discuss these values. On the basis of this measure, is the portfolio's performance inferior or superior? Explain.

d. Calculate Jensen's measure (Jensen's alpha) for the portfolio. Discuss its value. On the basis of this measure, is the portfolio's performance inferior or superior? Explain.

e. Compare, contrast and discuss your analysis using the three measures in parts **b**, **c** and **d**. Evaluate the portfolio.

LG 5

Q13.6 Choose a high-growth managed fund and a defensive managed fund. Find and record their closing net asset values at the end of each *week* for the immediate past year. Assume that you wish to invest $10 400.

a. Assume you use dollar-cost averaging to buy units (shares) in *both* the high-growth and the defensive funds by purchasing $100 of each of them at the end of each week—a total investment of $10 400 (52 weeks × $200/week). How many units would you have purchased in each fund by year-end? What are the total number of units, the average cost per unit, and the year-end portfolio value of each fund? Total the year-end fund values and compare them to the total that would have resulted from investing $5200 in each fund at the end of the first week.

b. Assume you use a constant-dollar plan with 50% invested in the high-growth fund (speculative portion) and 50% invested in the defensive fund (conservative portion). If the portfolio is rebalanced every time the speculative portion is worth $500 more or $500 less than its initial value of $5200, what would be the total portfolio value and the number of shares in the speculative portion at year-end?

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG 1

P13.1 Refer to the table below:

	Fund A	Fund B
Beta	1.8	1.1
Investor A	20%	80%
Investor B	80%	20%

As between investor A and investor B, which is more likely to represent a retired couple? Why?

LG 1

P13.2 Portfolio A and portfolio B had the same holding period return last year. Most of the returns from portfolio A came from dividends, while most of the returns from portfolio B came from capital gains. Which portfolio is owned by a single working person making a high salary, and which is owned by a retired couple? Why?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG3 **P13.3** John Reardon purchased 100 shares of Timco Ltd in December 2010, at a total cost of $1762. He held the shares for 15 months and then sold them, netting $2500. During the period he held the shares, the company paid him $200 in cash dividends. How much, if any, was the capital gain realised upon the sale of shares? Calculate John's pre-tax HPR.

LG3 **P13.4** Jeff purchased 1000 shares of a speculative share on 2 January for $2.00 per share. Six months later on 1 July he sold them for $9.50 per share. He uses an online broker that charges him $10 per trade. What was Jeff's annualised HPR on this investment?

LG3 **P13.5** Jill invested $25 000 in the bonds of Industrial Ltd. She held them for 13 months, at the end of which she sold them for $26 746. During the period of ownership she received $2000 interest. Calculate the HPR on Jill's investment.

LG3 **P13.6** Charlotte bought 2000 shares of the balanced Jolla Fund exactly one year and two days ago for an NAV of $8.60 per share. During the year, the fund distributed investment income dividends of $0.32 per share and capital gains dividends of $0.38 per share. At the end of the year, Charlotte realised $8.75 per share on the sale of all 2000 shares. Calculate Charlotte's HPR on this transaction.

LG3 **P13.7** Linda, who is in a 33% ordinary tax bracket, purchased 10 options contracts for a total cost of $4000 just over one year ago. Linda netted $4700 upon the sale of the 10 contracts today. What are Linda's HPRs on this transaction?

LG3 **P13.8** Max had a portfolio of long-term bonds that they purchased many years ago. The bonds pay 12% interest annually, and the face value is $100 000. What is his annual HPR on this investment? (Assume it trades at par.)

LG3 **P13.9** On 1 January 2011, Simon's share portfolio of 15 companies had a market value of $264 000. At the end of May 2011, Simon sold one of the shares, which had a beginning-of-year value of $26 300, for $31 500. He did not reinvest those or any other funds in the portfolio during the year. He received total dividends in his portfolio of $12 500 during the year. On 31 December 2011, Simon's portfolio had a market value of $250 000. Find the HPR on Simon's portfolio during the year ended 31 December 2011. (Measure the amount of withdrawn funds at their beginning-of-year value.)

LG3 **P13.10** Congratulations! Your portfolio returned 11% last year, 2% better than the market return of 9%. Your portfolio had a standard deviation of earnings equal to 18%, and the risk-free rate is equal to 6%. Calculate Sharpe's measure for your portfolio. If the market's Sharpe's measure is 0.3, did you do better or worse than the market from a risk–return perspective?

LG4 **P13.11** Niki's portfolio earned a return of 11.8% during the year just ended. The portfolio's standard deviation of return was 14.1%. The risk-free rate is currently 6.2%. During the year, the return on the market portfolio was 9.0% and its standard deviation was 9.4%.

a. Calculate Sharpe's measure for Niki's portfolio for the year just ended.

b. Compare the performance of Niki's portfolio found in part **a** to that of Henry's portfolio, which has a Sharpe's measure of 0.43. Which portfolio performed better? Why?

c. Calculate Sharpe's measure for the market portfolio for the year just ended.

d. Use your findings in parts **a** and **c** to discuss the performance of Niki's portfolio relative to the market during the year just ended.

LG4 **P13.12** Your portfolio has a beta equal to 1.3. It returned 12% last year. The market returned 10%; the risk-free rate is 6%. Calculate Treynor's measure for your portfolio and the market. Did you earn a better return than the market given the risk you took?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG4 **P13.13** During the year just ended, Anna's portfolio, which has a beta of 0.90, earned a return of 8.6%. The risk-free rate is currently 7.3%, and the return on the market portfolio during the year just ended was 9.2%.

a. Calculate Treynor's measure for Anna's portfolio for the year just ended.
b. Compare the performance of Anna's portfolio found in part **a** to that of Stacey's portfolio, which has a Treynor's measure of 1.25%. Which portfolio performed better? Explain.
c. Calculate Treynor's measure for the market portfolio for the year just ended.
d. Use your findings in parts **a** and **c** to discuss the performance of Anna's portfolio relative to the market during the year just ended.

LG4 **P13.14** Your portfolio returned 13% last year, with a beta equal to 1.5. The market return was 10% and the risk-free rate 6%. Did you earn more or less than the required rate of return on your portfolio? (Use Jensen's measure.)

LG4 **P13.15** Chee Chow's portfolio has a beta of 1.3 and earned a return of 12.9% during the year just ended. The risk-free rate is currently 7.8%. The return on the market portfolio during the year just ended was 11.0%.

a. Calculate Jensen's measure (Jensen's alpha) for Chee's portfolio for the year just ended.
b. Compare the performance of Chee's portfolio found in part **a** to that of Carl's portfolio, which has a Jensen's measure of –0.24. Which portfolio performed better? Explain.
c. Use your findings in part **a** to discuss the performance of Chee's portfolio during the period just ended.

LG4 **P13.16** The risk-free rate is currently 8.1%. Use the data in the accompanying table for the Fio family's portfolio and the market portfolio during the year just ended to answer the questions that follow.

Data Item	Fios' Portfolio	Market Portfolio
Rate of return	12.8%	11.2%
Standard deviation of return	13.5%	9.6%
Beta	1.10	1.00

a. Calculate Sharpe's measure for the portfolio and the market. Compare the two measures, and assess the performance of the Fios' portfolio during the year just ended.
b. Calculate Treynor's measure for the portfolio and the market. Compare the two, and assess the performance of the Fios' portfolio during the year just ended.
c. Calculate Jensen's measure (Jensen's alpha). Use it to assess the performance of the Fios' portfolio during the year just ended.
d. On the basis of your findings in parts **a, b** and **c**, assess the performance of the Fios' portfolio during the year just ended.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG5 **P13.17** Over the past two years, Jon has used a dollar-cost averaging formula to purchase $300 worth of FCI shares each month. The price per share paid each month over the two years is given in the following table. Assume that Jon paid no brokerage commissions on these transactions.

	Price per Share of FCI	
Month	Year 1	Year 2
January	$11.63	$11.38
February	11.50	11.75
March	11.50	12.00
April	11.00	12.00
May	11.75	12.13
June	12.00	12.50
July	12.38	12.75
August	12.50	13.00
September	12.25	13.25
October	12.50	13.00
November	11.85	13.38
December	11.50	13.50

a. How much was Jon's total investment over the two-year period?
b. How many shares did Jon purchase over the two-year period?
c. Use your findings in parts **a** and **b** to calculate Jon's average cost per share of FCI.
d. What was the value of Jon's holdings in FCI at the end of the second year?

LG5 **P13.18** Refer to the table below:

		MM Managed Fund		
Time Period	Share Price	Shares	Fund NAV	Shares
1	$20.00	1000	$20.00	1000
2	$25.00		$21.00	

Assume you are using a constant-dollar plan with a rebalancing trigger of $1500. The share price represents your speculative portfolio, and the MM fund represents your conservative portfolio. What action, if any, should you take in time period 2? Be specific.

LG5 **P13.19** Refer to Problem 13.18. Now assume you are using a constant-ratio plan with a rebalance trigger of speculative-to-conservative of 1.25. What action, if any, should you take in time period 2? Be specific.

LG5 **P13.20** Refer to the table below:

		MM Managed Fund		
Time Period	Unit Price	Units	Fund NAV	Units
1	$20.00	1000	$20.00	1000
2	$30.00	1000	$19.00	1000

Assume you are using a variable-ratio plan. You have decided that when the speculative portfolio reaches 60% of the total, you will reduce its proportion to 45%. What action, if any, should you take in time period 2? Be specific.

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 13.1 ASSESSING PORTFOLIO PERFORMANCE

LG 3 LG 4 Mary and Nick have an investment portfolio containing four assets. It was developed to provide them with a balance between current income and capital appreciation. Rather than acquire fund units or diversify within a given class of asset, they developed their portfolio with the idea of diversifying across various types of assets. The portfolio currently contains shares, industrial bonds, managed fund units and options. They acquired each of these during the past three years, and they plan to invest in other assets sometime in the future.

Currently, they are interested in measuring the return on their investment and assessing how well they have done relative to the market. They hope that the return earned over the past calendar year is in excess of what they would have earned by investing in a portfolio consisting of the ASX 300 Index. Their research has indicated that the risk-free rate was 7.2% and that the (before-tax) return on the ASX 300 portfolio was 10.1% during the past year. With the aid of a friend, they have been able to estimate the beta of their portfolio, which was 1.20. In their analysis, they have planned to ignore taxes, because they feel their earnings have been adequately sheltered. Because they did not make any portfolio transactions during the past year, all of their investments have been held more than 12 months, and they would have to consider only unrealised capital gains, if any. To make the necessary calculations, they have gathered the following information on each of the four assets in their portfolio.

Shares. They own 400 shares of KJ Enterprises. KJ is a diversified manufacturer of metal pipe and is known for its unbroken stream of dividends. Over the past few years, it has entered new markets and, as a result, has offered moderate capital appreciation potential. Its share price has risen from $17.25 at the start of the last calendar year to $18.75 at the end of the year. During the year, quarterly cash dividends of $0.20, $0.20, $0.25 and $0.25 were paid.

Industrial bonds. They own eight T Industries bonds. The bonds have a $1000 par value, have a 9.250% coupon, and are due in 2021. They are A-rated by Moody's. The bond was quoted at 97.000 at the beginning of the year and ended the calendar year at 96.375%.

Managed fund. They hold 500 units in the Holt Fund, a balanced fund. The dividend distributions on the fund during the year consisted of $0.60 in investment income and $0.50 in capital gains. The fund's NAV at the beginning of the calendar year was $19.45, and it ended the year at $20.02.

Options. They own 100 options contracts on the shares of a company they follow. The value of these contracts totalled $26 000 at the beginning of the calendar year. At year-end the total value of the options contracts was $29 000.

QUESTIONS

1. Calculate the holding period return on a before-tax basis for each of these four assets.
2. Recognising that all gains on their investments were unrealised, calculate the before-tax portfolio HPR for their four-asset portfolio during the past calendar year. Evaluate this return relative to its current income and capital gain components.
3. Use the HPR calculated in question **1** to compute Jensen's measure (Jensen's alpha). Use that measure to analyse the performance of the portfolio on a risk-adjusted, market-adjusted basis. Comment on your finding. Is it reasonable to use Jensen's measure to evaluate a four-vehicle portfolio? Why or why not?
4. On the basis of your analysis in questions **1**, **2** and **3**, what, if any, recommendations might you offer them relative to the revision of their portfolio? Explain your recommendations.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 13.2 EVALUATING FORMULA PLANS: CHARLES' APPROACH

LG 5 Charles wishes to develop a rational basis for timing his portfolio transactions. He currently holds a security portfolio with a market value of nearly $100 000, divided equally between a very conservative, low-beta share, ConCam United, and a highly speculative, high-beta share, Fleck Enterprises. On the basis of his reading of the investments' literature, Charles does not believe it is necessary to diversify one's portfolio across eight to 15 securities. His own feeling, based on his independent mathematical analysis, is that one can achieve the same results by holding a two-security portfolio in which one security is very conservative and the other is highly speculative. His feelings on this point will not be altered. He plans to continue to hold such a two-security portfolio until he finds that his theory does not work. During the past several years, he has earned a rate of return in excess of the risk-adjusted, market-adjusted rate expected on such a portfolio.

Charles's current interest centres on possibly developing his own formula plan for timing portfolio transactions. The current stage of his analysis focuses on the evaluation of four commonly used formula plans in order to isolate the desirable features of each. The four plans being considered are (1) dollar-cost averaging, (2) the constant-dollar plan, (3) the constant-ratio plan, and (4) the variable-ratio plan. Charles's analysis of the plans will involve the use of two types of data. Dollar-cost averaging is a passive buy-and-hold strategy in which the periodic investment is held constant. The other plans are more active in that they involve periodic purchases and sales within the portfolio. Thus, differing data are needed to evaluate the plans.

For evaluating the dollar-cost averaging plan, Charles decided he would assume an investment of $500 at the end of each 45-day period. He chose to use 45-day time intervals to achieve certain brokerage fee savings that would be available by making larger transactions. The $500 per 45 days totalled $4000 for the year and equalled the total amount Charles invested during the past year. (*Note:* For convenience, the returns earned on the portions of the $4000 that remain uninvested during the year are ignored.) In evaluating this plan, he would assume that half ($250) was invested in the conservative shares (ConCam United) and the other half in the speculative shares (Fleck Enterprises). The share prices for each at the end of the eight 45-day periods when purchases were to be made are given in the table below.

	Price per Share	
Period	ConCam	Fleck
1	$22.13	$22.13
2	21.88	24.50
3	21.88	25.38
4	22.00	28.50
5	22.25	21.88
6	22.13	19.25
7	22.00	21.50
8	22.25	23.63

To evaluate the three other plans, Charles decided to begin with a $4000 portfolio evenly split between the two shares. He chose to use $4000, because that amount would correspond to the total amount invested in the two shares over one year using dollar-cost averaging. He planned to use the same eight points in time given earlier to assess the portfolio and make transfers within it if required. For each of the three plans evaluated using these data, he established the following triggering points.

Constant-dollar plan. Each time the speculative portion of the portfolio is worth 13% more or less than its initial value of $2000, the portfolio is rebalanced to bring the speculative portion back to its initial $2000 value.

Constant-ratio plan. Each time the ratio of the value of the speculative portion of the portfolio to the value of the conservative portion is (1) greater than or equal to 1.15 or (2) less than or equal to 0.84, the portfolio is rebalanced through sale or purchase, respectively, to bring the ratio back to its initial value of 1.0.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Variable-ratio plan. Each time the value of the speculative portion of the portfolio rises above 54% of the total value of the portfolio, its proportion is reduced to 46%. Each time the value of the speculative portion of the portfolio drops below 38% of the total value of the portfolio, its proportion is raised to 50%.

QUESTIONS

1. Under the dollar-cost averaging plan, determine the total number of shares purchased, the average cost per share, and the year-end portfolio value expressed both in dollars and as a percentage of the amount invested for (a) the conservative shares, (b) the speculative shares and (c) the total portfolio.
2. Using the constant-dollar plan, determine the year-end portfolio value expressed both in dollars and as a percentage of the amount initially invested for (a) the conservative portion, (b) the speculative portion and (c) the total portfolio.
3. Repeat question **2** for the constant-ratio plan. Be sure to answer all parts.
4. Repeat question 2 for the variable-ratio plan. Be sure to answer all parts.
5. Compare and contrast your results from questions **1** through **4**. You may want to summarise them in tabular form. Which plan would appear to have been most beneficial in timing Charles's portfolio activities during the past year? Explain.

Excel with Spreadsheets

While most people believe that it is not possible to consistently time the market, there are several plans that allow investors to time purchases and sales of securities. These are referred to as formula plans—mechanical methods of managing a portfolio that attempt to take advantage of cyclical price movements. The objective is to mitigate the level of risk facing the investor.

One such formula plan is dollar-cost averaging. Here, a fixed dollar amount is invested in a security at fixed intervals. One objective is to increase the value of the given security over time. If prices decline, more shares are purchased; when market prices increase, fewer shares are purchased per period. The essence is that an investor is more likely not to buy overvalued securities.

Over the past 12 months, March 2011 through February 2012, Mary has used the dollar-cost averaging formula to purchase $1000 worth of Neo shares each month. The monthly price per share paid over the 12-month period is given following. Assume that Mary paid no brokerage commissions on these transactions.

Create a spreadsheet model similar to the spreadsheet for Table 13.12, which you can view at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885, to analyse the following investment situation for Neo shares through dollar-cost averaging.

Year	Month	Price paid per share
2011	March	$14.30
	April	16.18
	May	18.37
	June	16.25
	July	14.33
	August	15.14
	September	15.93
	October	19.36
	November	23.25
	December	18.86
2012	January	22.08
	February	22.01

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Questions

1. What is the total investment over the period from March 2011 through February 2012?
2. What is the total number of Neo shares purchased over the 12-month period?
3. What is the average cost per share?
4. What is the year-end (February 2012) portfolio value?
5. What is the profit or loss as of the end of February 2012?
6. What is the return on the portfolio after the 12-month period?

For many of the topics covered in this textbook, we have found companion information on the Web. There are numerous sites offering advice on *how* and *where* to invest. The quantity and variety of such information are overwhelming. But once you have made some investments, you need to determine how well your portfolio is performing. Regularly check Internet directories published in *Smart Investor*. To improve your portfolio performance you can undertake investor short courses at universities and with specialist trainers. Also check these websites for guidance and information.

WEBSITE	URL
Australian Financial Markets Association	www.afma.com.au
Australian Securities Exchange	www.asx.com.au
E*TRADE Australia	www.etrade.com.au/tax
iShares	http://au.ishares.com.au
Morning star	www.morningstar.com.au
Smart Investor	www.afrsmartinvestor.com.au
Vanguard Investments	www.vanguard.com.au
Yahoo!7 Finance	http://au.finance.yahoo.com

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CFA EXAM QUESTIONS

PORTFOLIO MANAGEMENT

Following is a sample of nine Level 1 CFA exam questions that deal with many of the topics covered in Chapters 12 and 13 of this text, including the structure of mutual (managed) funds, portfolio diversification, portfolio returns and the administration of personal portfolios. (*Note*: When answering some of the questions below, remember the coefficient of variation = σ/; and for a normally distributed distribution, the safety-first ratio is basically the same as Sharpe's measure.) (When answering the questions, give yourself 1½ minutes for each question; the objective is to correctly answer six of the nine questions in a period of 14 minutes.)

1. An analyst compared the performance of a hedge fund index with the performance of a major share index over the past eight years. She noted that the hedge fund index (created from a database) had a higher average return, lower standard deviation, and higher Sharpe ratio than the share index. All the successful funds that have been in the hedge fund database continued to accept new money over the eight-year period. Are the average return and the Sharpe ratio, respectively, for the hedge fund index *most likely* overstated or understated?

	Average return for the hedge fund index	Sharpe ratio for the hedge fund index
a.	Overstated	Overstated
b.	Overstated	Understated
c.	Understated	Overstated

2. In-kind redemption is a process available to investors participating in:
   a. traditional mutual funds but not exchange traded funds
   b. exchange traded funds but not traditional mutual funds
   c. both traditional mutual funds and exchange traded funds

3. Does trading take place only once a day at closing market prices in the case of:

	exchange traded funds?	traditional mutual funds?
a.	No	No
b.	No	Yes
c.	Yes	No

4. Do funds that are likely to trade at substantial discounts from their net asset values include:

	exchange traded funds?	closed-end funds?
a.	No	No
b.	No	Yes
c.	Yes	No

5. Forms of real estate investment that typically involve issuing shares that are traded on the share market include.
   a. real estate investment trusts but not commingled funds
   b. commingled funds but not real estate investment trusts
   c. both real estate investment trusts and commingled funds

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

6. An analyst gathered the following information:

Portfolio	Mean Return (%)	Standard Deviation of Returns (%)
1	9.8	19.9
2	10.5	20.3
3	13.3	33.9

If the risk-free of return is 3.0%, the portfolio that had the *best* risk-adjusted performance based on the Sharpe ratio is:

a. Portfolio 1 b. Portfolio 2 c. Portfolio 3

7. An analyst gathered the following information about a portfolio's performance over the past ten years:

Mean annual return	11.8%
Standard deviation of annual returns	15.7%
Portfolio beta	1.2

If the mean return on the risk-free asset over the same period was 5.0%, the coefficient of variation and Sharpe ratio, respectively, for the portfolio are *closest* to:

	Coefficient of variation	Sharpe ratio
a.	0.75	0.43
b.	1.33	0.36
c.	1.33	0.43

8. Western Investments holds a fixed-income portfolio comprised of four bonds whose market values and durations are given in the following table.

	Bond A	Bond B	Bond C	Bond D
Market value	$200 000	$300 000	$250 000	$550 000
Duration	4	6	7	8

The portfolio's duration is *closest* to:

a. 6.06 b. 6.25 c. 6.73

9. At the end of the current year, an investor wants to make a donation of $20 000 to charity but does not want the year-end market value of her portfolio to fall below $600 000. If the shortfall level is equal to the risk-free rate of return and returns from all portfolios considered are normally distributed, will the portfolio that minimises the probability of failing to achieve the investor's objective *most likely* have the:

	highest safety-first ratio?	highest Sharpe ratio?
a.	No	Yes
b.	Yes	No
c.	Yes	Yes

(*Source:* From Professional Exam Review. *CFA Candidate Study Notes, Level 1,* Volume 4, 2E. © 2009 Delmar Learning, a part of Cengage Learning, Inc. Reproduced by permission. <www.cengage.com/permissions>.)

Answers: 1. a; 2. b; 3. b; 4. b; 5. a; 6. b; 7. c; 8. c; 9. c.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

PART SIX

Derivative Securities

14 Options: Puts and Calls

15 Commodities and Financial Futures

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER

14 Options: Puts and Calls

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Discuss the basic nature of options in general and puts and calls in particular and understand how these investment vehicles work.
- LG2 Describe the options market and note key options provisions, including strike prices and expiration dates.
- LG3 Explain how put and call options are valued and the forces that drive options prices in the marketplace.
- LG4 Describe the profit potential of puts and calls and note some popular put and call investment strategies.
- LG5 Explain the profit potential and loss exposure from writing covered call options and discuss how writing options can be used as a strategy for enhancing investment returns.
- LG6 Describe market index options, puts and calls on foreign currencies, and discuss how these securities can be used by investors.

Options Trading in Australia

Options have had a long trading history in Australia. Since the 1970s options have been used to hedge against potential losses or used to seek speculative gains.

Options operate in the Australian debt, currency and equities markets. They are part of the derivative segment of these markets. Their relative turnover value in each of these markets in 2008/09 is shown below.

Annual Turnover Summary of Australian Financial Markets 2008/09 (A$ billion)

Debt markets—Total	48 838
Interest rate options	285
Currency markets—Total	45 137
Currency options	834
Equities markets—Total	2 598
ASX options	374

Options are also traded on the Sydney Futures Exchange.

Options play an important role in the investment landscape, especially by providing individuals and businesses with a means of reducing risks on their investments and debts and a means of benefiting from price changes in underlying assets without investing much capital. This chapter will explain the characteristics of options and demonstrate how they can be used in investment programs, especially in the equities markets.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Put and Call Options

LG1 LG2

When investors buy shares they are entitled to all the rights and privileges of ownership such as receiving dividends and having the right to vote at shareholder meetings. Investors who acquire bonds or convertible issues are also entitled to certain benefits of ownership such as receiving periodic interest payments. Shares, bonds and convertibles are all examples of *financial assets*. They represent financial claims on the issuing organisation. In contrast, investors who buy options acquire nothing more than the *right* to subsequently buy or sell other, related securities. An **option** gives the holder the right to buy or sell a certain amount of an underlying asset (such as shares) at a specified price over a specified period of time.

option
a security that gives the holder the right to buy or sell a certain amount of an underlying financial asset at a specified price at a particular time (or for a specified period of time).

Options are *contractual instruments*, whereby two parties enter into a contract to give something of value to the other. The option *buyer* has the right to buy or sell an underlying asset for a given period of time, at a price that was fixed at the time of the contract. The option *seller* stands ready to buy or sell the underlying asset according to the terms of the contract, for which the buyer has paid the seller a certain amount of money. We'll look at two basic kinds of options in this chapter: *puts* and *calls*, both of which enjoy considerable popularity as investment vehicles.

In addition, there are two other types of options: *rights* and *warrants*. Rights originate when corporations raise money by issuing new shares. (See Chapter 6 for a discussion of *rights offerings*.) Rights enable shareholders to buy shares of the new issue at a specified price for a specified, fairly short period of time. Because their life span is so short—usually no more than a few weeks—rights hold very little investment appeal for the average individual investor. In contrast, warrants are long-term options that grant the right to buy shares in a certain company for a given period of time (often fairly long).

Basic Features of Puts and Calls

Share options began trading on the Chicago Board Options Exchange in the early 1970s. Soon the interest in options spread to other exchanges and spilled over to other kinds of financial assets. Today, investors can trade puts and calls on shares, share indices, exchange-traded funds, foreign currencies, debt instruments, and commodities and financial futures.

As we will see, although the underlying financial assets may vary, the basic features of different types of options are very similar. Perhaps the most important feature to understand is that options allow investors to benefit from price changes in the underlying asset without investing much capital.

put
a negotiable instrument that enables the holder to sell the underlying security at a specified price over a set period of time.

call
a negotiable instrument that gives the holder the right to buy securities at a stated price within a certain time period.

derivative securities
securities, such as puts, calls and other options, that derive their value from the price behaviour of an underlying real or financial asset.

A Negotiable Contract Puts and calls are negotiable instruments, issued in bearer form, that allow the holder to buy or sell a specified amount of a specified security at a specified price. For example, a put or a call on shares covers 1000 shares in a specific company. The number of shares varies among exchanges. On the ASX a contract is for 1000 shares. A **put** enables the holder to sell the underlying security at the specified price (known as the *exercise* or *strike price*) over a set period of time. A **call**, in contrast, gives the holder the right to buy the security at the stated (strike) price within a certain time period. As with any option, there are no voting rights, no privileges of ownership and no interest or dividend income. Instead, *puts and calls possess value to the extent that they allow the holder to benefit from price movements of the underlying asset.*

Because puts and calls derive their value from the price behaviour of some other real or financial asset, they are known as **derivative securities**. Rights and warrants, as

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

well as futures contracts (which we'll study in Chapter 15), are also derivative securities. Although certain segments of this market are for big institutional investors only, there's still ample room for the individual investor. Many of these securities—especially those listed on exchanges—are readily available to, and are actively traded by, individuals as well as institutions.

option premium
the quoted price that the investor pays to buy a listed put or call option.

The price that an investor pays to buy an option is called the **option premium**. As we will see, an option's premium depends on characteristics of the option such as its strike price and expiration date and on the price of the underlying asset. However, don't let the word 'premium' confuse you. It's just the market price of the option.

leverage
the ability to obtain a given equity position at a reduced capital investment, thereby magnifying returns.

One of the key features of puts and calls is the attractive **leverage** opportunities they offer. Such opportunities exist because of the low prices these options carry relative to the market prices of the underlying financial assets. What's more, the lower cost in no way affects the payoff or capital appreciation potential of your investment. To illustrate, consider a call on a share that gives you the right to buy 1000 shares at a (strike) price of $45 a share. If that share currently sells for $45, the call option would sell for just a few dollars—let's say $3 per option for the sake of illustration (or $3000 since the option contract covers 1000 shares). Next, suppose that a month or two later the share price has increased by $10 to $55. At that point, you might exercise your right to buy 1000 shares for $45 each. You pay $45 000 to acquire the shares and then immediately resell them at the market price for $55 000, pocketing a gain of $10 000. Thus, in a short period of time your $3000 up-front investment grew to $10 000, a gain of 233%. The percentage increase in the shares over this period was just 22.2% ($10 ÷ $45), so the percentage gain on the option is much greater than the percentage gain on the share. That's the benefit of the leverage the options provide.

Seller Versus Buyer Puts and calls are a unique type of security because they are *not* issued by the organisations that issue the underlying share. Instead, they are *created by investors*. It works like this: suppose you want to sell to another investor the right to buy 100 shares. You could do this by 'writing a call'. The individual (or institution) writing the option is known as the **option seller** or **writer**. As the option writer, you sell the option in the market and so are entitled to receive the price paid by the buyer for the put or call.

option seller (writer)
the individual or institution that writes/creates the put and call options.

Puts and calls are both written (sold) and purchased through securities brokers and dealers. In fact, they're as easy to buy and sell as shares; a simple phone call, or a few mouse clicks, is all it takes. The writer stands behind the option, because it is the *writer* who must buy or deliver the shares or other financial assets according to the terms of the option. (*Note:* The writers of puts and calls *have a legally binding obligation* to stand behind the terms of the contracts they have written. The buyer can just walk away from the deal if it turns sour; the writer cannot.)

Puts and calls are written for a variety of reasons, most of which we will explore in the following sections. At this point, suffice it to say that writing options can be a viable investment strategy and can be a profitable course of action because, more often than not, *options expire worthless*.

How Puts and Calls Work Taking the *buyer's* point of view, we will briefly examine how puts and calls work and how they derive their value. To start, it is best to look at their profit-making potential. For example, consider the call described earlier that has a $45 strike price and sells for $3. As the buyer of the call option, you hope for a rise in the price of the underlying security (in this case, shares). What is the profit potential from this transaction if the price of the shares does indeed move up to, say, $75 by the expiration date on the call?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

AMERICAN OR EUROPEAN?—Put and call options can be issued in either American or European form. Actually, this has absolutely nothing to do with where the options are traded, but rather with when they can be exercised. An *American* option can be exercised on any business day that the option is traded. A *European* option can be exercised only on the day of expiration. Because the right to exercise is more flexible with American options than with European options, the American variety is often more desirable, and hence more valuable in the market. But that's not always true. Having the right to exercise an option prior to its expiration date does not mean that it is optimal to do so. In many cases, an investor is better off selling the option in the open market rather than exercising it, and in those instances, the prices of American and European options are similar.

The answer is that you will earn $30 ($75 − $45) on each of the 1000 shares in the call, minus the original $3000 cost of the option. In other words, you'll earn a gross profit of $30 000 from your $3000 investment. This is so because you have the right to buy 1000 shares, from the option writer, at a price of $45 each, and then immediately turn around and sell them in the market for $75 a share.

Could you have made the same gross profit ($30 000) by investing directly in the shares? Yes, if you had purchased 1000 shares. Buying 1000 shares of a $45 share requires an initial investment of $45 000 compared to the $3000 investment needed to buy the options. As a consequence, the rate of return from buying the shares is much less than the rate of return from buying the options. The return potential of shares and calls differs considerably. This difference attracts investors and speculators to calls whenever the price outlook for the underlying financial asset is positive. Such differential returns are, of course, the direct result of *leverage*, which rests on the principle of reducing the level of capital required in a given investment *without materially affecting the dollar amount of the payoff or capital appreciation from that investment*. Note that although our illustration used shares, this same valuation principle applies to any of the other financial assets that may underlie call options, such as market indices, foreign currencies and futures contracts.

A similar situation can be worked out for puts. Assume that for the same share (which has a current price of $45) you could pay $7000 and buy a put to *sell* 1000 shares at a strike price of $50 each. As the buyer of a put, you want the price to *drop*. Assume that your expectations are correct and the price of the share does indeed drop, to $25 a share. Here again, when you exercise the put option you realise a gross profit of $25 per share because you can buy the share in the open market for $25 and then exercise your right to sell it for $50.

Fortunately, put and call investors do *not* have to exercise their options and make simultaneous buy and sell transactions in order to receive their profit. That's because *the options themselves have value and can be traded in the secondary market*. The value of both puts and calls is directly linked to the market price of the underlying financial asset, so the *value of a call* increases as the market price of the underlying security *rises*. Likewise, the *value of a put* increases as the price of the security *declines*. Thus, *you can get your money out of options by selling them in the open market*, just as with any other security.

Advantages and Disadvantages The major advantage of investing in puts and calls is the leverage they offer. This feature allows investors to profit from movements in the underlying asset without investing a large amount of money up front. Also appealing is the fact that puts and calls can be used profitably when the price of the underlying security goes up *or* down.

A major disadvantage of puts and calls is that the holder enjoys neither interest or dividend income nor any other ownership benefits. Moreover, because puts and calls have limited lives, there is a limited time during which the underlying asset can move in the direction that makes the option profitable. Finally, while it is possible to buy calls and puts without investing a lot of money up front, the likelihood that an investor will lose 100% of the money that he or she does invest is much higher with options than with shares. That's because if the underlying share moves just a little in the wrong direction, a put or call option on that share will be totally worthless when it expires.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Options Markets

Although the concept of options can be traced back to the writings of Aristotle, options trading in the United States did not begin until the late 1700s. Even then, up to the early 1970s, this market remained fairly small, largely unorganised, and the almost-private domain of a handful of specialists and traders. All of this changed, however, on 26 April 1973, when the Chicago Board Options Exchange (CBOE) opened. Australia began options trading in 1976 through an Australian Options Market (AOM).

Conventional Options Prior to the creation of the CBOE, put and call options trading was conducted in the over-the-counter market through a handful of specialised dealers. Investors who wished to purchase puts and calls contacted their own brokers, who contacted the options dealers. The dealers would find investors willing to write the options. If the buyer wished to exercise an option, he or she did so with the writer and no one else—a system that largely prohibited any secondary trading. On the other hand, there were virtually no limits to what could be written, so long as the buyer was willing to pay the price. Over-the-counter options, known today as **conventional options**, are now used almost exclusively by institutional investors. Accordingly, our attention in this chapter will focus on listed markets, like the ASX, where individual investors do most of their options trading.

conventional options
put and call options sold over the counter.

Listed Options **Listed options** are put and call options traded on organised exchanges. Today, trading in listed options is done in both puts and calls and takes place on exchanges. In addition to shares, the options exchanges also offer listed options on share indices, exchange-traded funds, debt securities, foreign currencies, and even commodities and financial futures.

listed options
put and call options listed and traded on organised securities exchanges, such as the ASXD.

Listed options not only provide a convenient market for puts and calls, but also standardised expiration dates and exercise prices. The listed options exchanges created a clearing house that eliminated direct ties between buyers and sellers of options and reduced the cost of executing put and call transactions. It also developed an active secondary market, with wide distribution of price information. As a result, it is now as easy to trade a listed option as a listed share.

Share Options

The advent of the listed option exchange had a dramatic impact on the trading volume of puts and calls. The data on options turnover for 2008/09 is shown at the beginning of this chapter.

Listed options exchanges have unquestionably added a new dimension to investing. In order to avoid serious (and possibly expensive) mistakes with these securities, however, you must fully understand their basic features. In the sections that follow, we will look closely at the investment attributes of share options and the trading strategies for using them. Later, we'll explore share-index (and ETF) options and then briefly look at other types of puts and calls, including interest rate and currency options. (Futures options will be taken up in Chapter 15, after we study futures contracts.)

Share Option Provisions Because of their low unit cost, share options (or *equity options,* as they're also called) are very popular with individual investors. Except for the underlying financial asset, they are like any other type of put or call, subject to the same kinds of contract provisions and market forces. There are two provisions that are

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

especially important for share options: (1) the price—known as the *strike price*—at which the share can be bought or sold, and (2) the amount of time remaining until expiration. As we'll see below, both the strike price and the time remaining to expiration have a significant bearing on their valuation and pricing.

strike price
the price contract between the buyer of an option and the writer; the stated price at which you can buy a security with a call or sell a security with a put.

expiration date
the date at which an option expires.

Strike Price The **strike price** represents the price contract between the buyer of the option and the writer. For a call, the strike price specifies the price at which each of the 1000 shares can be bought. For a put, it represents the price at which the share can be sold to the writer. With conventional (OTC) options, there are no constraints on the strike price. With listed options, strike prices are *standardised*.

Expiration Date The **expiration date** is also an important provision. It specifies the life of the option, just as the maturity date indicates the life of a bond. The expiration date, in effect, specifies the length of the contract between the holder and the writer of the option. Thus, if you hold a six-month call on Woolworths with a strike price of, say, $27, that option gives you the right to buy 1000 shares of Woolworths at $27 per share at any time over the next six months. *No matter what happens to the market price of the shares,* you can use your call option to buy 1000 shares of Woolworths at $27 a share. If the price of the shares moves up, you stand to make money. If it goes down, you'll be out the cost of the option.

Expiration dates for options in the conventional market can fall on any working day of the month. In contrast, expiration dates are *standardised* in the *listed* options market. The ASX initially created three expiration cycles for all listed options:

- January, April, July and October
- February, May, August and November
- March, June, September and December

Given the month of expiration, the actual day of expiration is always the same: the Thursday before the last Friday of each expiration month (subject to public holiday effects).

Put and Call Transactions Option traders are subject to commission and transaction costs whenever they buy or sell an option or whenever they write an option. The writing of puts and calls is subject to normal transaction costs; these costs effectively represent compensation to the broker or dealer for *selling* the option.

Listed options have their own marketplace and quotation system. Finding the price (or *premium*) of a listed share option is fairly easy. Figure 14.1 illustrates quotations from the ASX. Note that quotes are provided for calls and puts separately. For each option, quotes are listed for various combinations of strike prices and expiration dates. Because there are so many options and a substantial number of them are rarely traded, financial publications and website list quotes only for the more actively traded options.

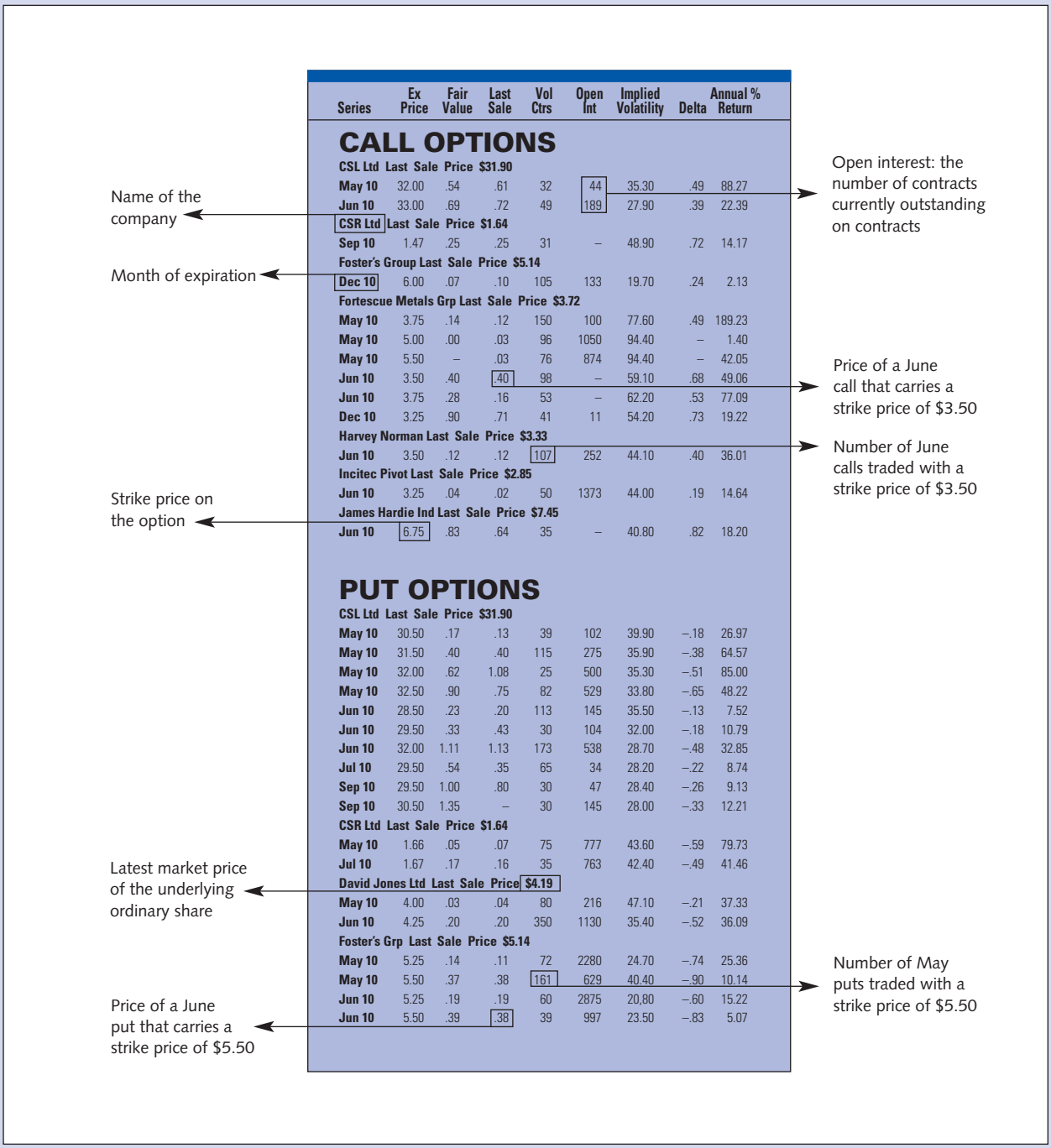
The quotes are standardised. The company name and closing price of the underlying share are listed first; the expiration month is then listed, followed by the exercise price and a calculation of the option's value.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 14.1

Listed Options Quotations

The quotes for puts and calls are listed separately. In addition to the closing price of the option, the latest price of the underlying security is shown, along with the strike price on the option.


Name of the company
Month of expiration
Strike price on the option
Latest market price of the underlying ordinary share
Price of a June put that carries a strike price of $5.50
Open interest: the number of contracts currently outstanding on contracts
Price of a June call that carries a strike price of $3.50
Number of June calls traded with a strike price of $3.50
Number of May puts traded with a strike price of $5.50

Series	Ex Price	Fair Value	Last Sale	Vol Ctrs	Open Int	Implied Volatility	Delta	Annual % Return
CALL OPTIONS								
CSL Ltd Last Sale Price $31.90								
May 10	32.00	.54	.61	32	44	35.30	.49	88.27
Jun 10	33.00	.69	.72	49	189	27.90	.39	22.39
CSR Ltd Last Sale Price $1.64								
Sep 10	1.47	.25	.25	31	–	48.90	.72	14.17
Foster's Group Last Sale Price $5.14								
Dec 10	6.00	.07	.10	105	133	19.70	.24	2.13
Fortescue Metals Grp Last Sale Price $3.72								
May 10	3.75	.14	.12	150	100	77.60	.49	189.23
May 10	5.00	.00	.03	96	1050	94.40	–	1.40
May 10	5.50	–	.03	76	874	94.40	–	42.05
Jun 10	3.50	.40	.40	98	–	59.10	.68	49.06
Jun 10	3.75	.28	.16	53	–	62.20	.53	77.09
Dec 10	3.25	.90	.71	41	11	54.20	.73	19.22
Harvey Norman Last Sale Price $3.33								
Jun 10	3.50	.12	.12	107	252	44.10	.40	36.01
Incitec Pivot Last Sale Price $2.85								
Jun 10	3.25	.04	.02	50	1373	44.00	.19	14.64
James Hardie Ind Last Sale Price $7.45								
Jun 10	6.75	.83	.64	35	–	40.80	.82	18.20
PUT OPTIONS								
CSL Ltd Last Sale Price $31.90								
May 10	30.50	.17	.13	39	102	39.90	–.18	26.97
May 10	31.50	.40	.40	115	275	35.90	–.38	64.57
May 10	32.00	.62	1.08	25	500	35.30	–.51	85.00
May 10	32.50	.90	.75	82	529	33.80	–.65	48.22
Jun 10	28.50	.23	.20	113	145	35.50	–.13	7.52
Jun 10	29.50	.33	.43	30	104	32.00	–.18	10.79
Jun 10	32.00	1.11	1.13	173	538	28.70	–.48	32.85
Jul 10	29.50	.54	.35	65	34	28.20	–.22	8.74
Sep 10	29.50	1.00	.80	30	47	28.40	–.26	9.13
Sep 10	30.50	1.35	–	30	145	28.00	–.33	12.21
CSR Ltd Last Sale Price $1.64								
May 10	1.66	.05	.07	75	777	43.60	–.59	79.73
Jul 10	1.67	.17	.16	35	763	42.40	–.49	41.46
David Jones Ltd Last Sale Price $4.19								
May 10	4.00	.03	.04	80	216	47.10	–.21	37.33
Jun 10	4.25	.20	.20	350	1130	35.40	–.52	36.09
Foster's Grp Last Sale Price $5.14								
May 10	5.25	.14	.11	72	2280	24.70	–.74	25.36
May 10	5.50	.37	.38	161	629	40.40	–.90	10.14
Jun 10	5.25	.19	.19	60	2875	20.80	–.60	15.22
Jun 10	5.50	.39	.38	39	997	23.50	–.83	5.07

(*Source: Australian Financial Review*, 22–23 May 2010, p. 57. Courtesy of the *Australian Financial Review*.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

14.1 Describe *put* and *call* options. Are they issued like other corporate securities?

14.2 What are *listed options,* and how do they differ from *conventional options*?

14.3 What are the main investment attractions of put and call options? What are the risks?

14.4 What is a *share option*? What is the difference between a share option and a *derivative security*? Describe a derivative security and give several examples.

14.5 What is a *strike price*? How does it differ from the market price of the share?

14.6 Why do put and call options have expiration dates? Is there a market for options that have passed their expiration dates?

Options Pricing and Trading

LG3 LG4 LG5

The value of a put or call depends to a large extent on the price of the financial asset that underlies the option. Getting a firm grip on the current and expected future value of a put or call is extremely important to options traders and investors. Thus, to get the most from any options trading program, you must understand how options are priced in the market. *Continuing to use share options as a basis of discussion,* let's look now at the basic principles of options valuation and pricing. We'll start with a brief review of how profits are derived from puts and calls. Then we'll take a look at several ways in which investors can use these options.

The Profit Potential from Puts and Calls

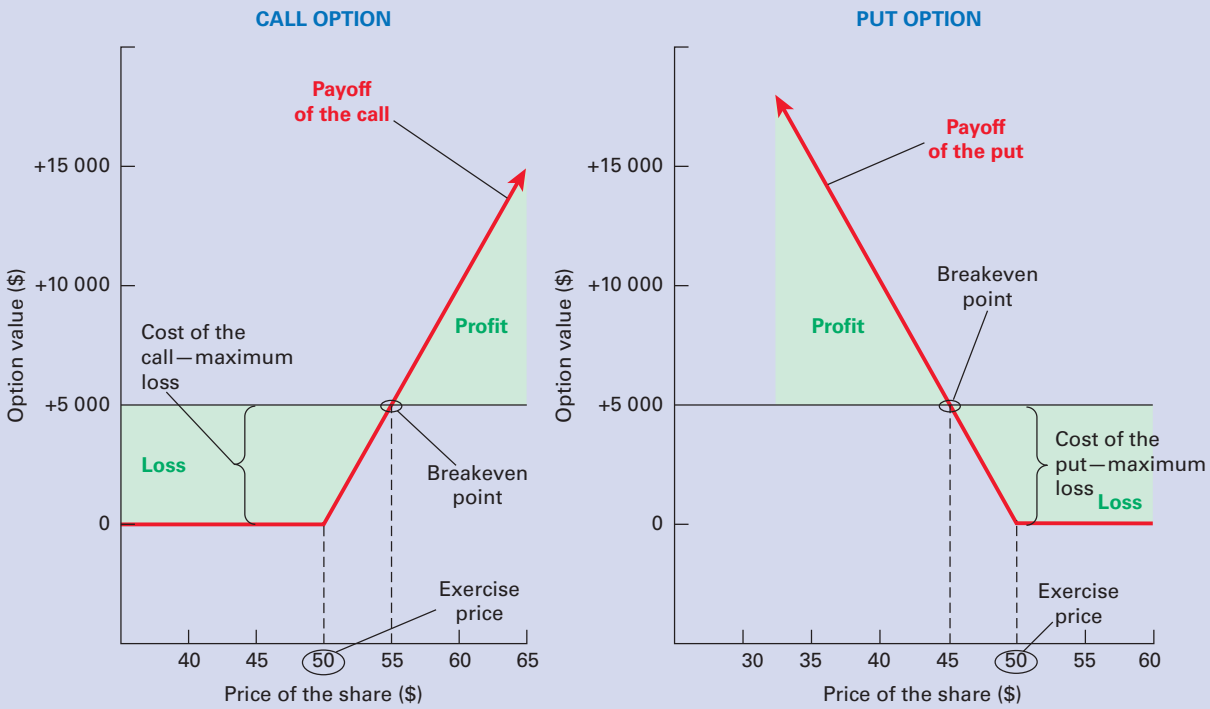
Although the quoted market price of a put or call is affected by such factors as time to expiration, share volatility and market interest rates, by far the most important variable is the *price behaviour of the underlying share.* This is the variable that drives any significant moves in the price of the option and that determines the option's profit (return) potential. When the price of the underlying share *moves up, calls do well.* When the price of the underlying share *drops, puts do well.* Such performance also explains why it's important to get a good handle on the expected future price behaviour of a share *before* you buy or sell (write) an option.

Figure 14.2 illustrates how the ultimate payoffs that options provide depend upon the underlying share price. By 'payoff' we mean the gain that an investor would receive from exercising the option—the difference between the share price and the strike price. The diagram on the left in Figure 14.2 depicts a call, and the one on the right depicts a put. The *call* diagram assumes that you pay $5000 for a call option contract (i.e. 1000 calls at $5 per call) that has a strike price of $50. The graph shows how the option payoff increases as the share price rises. Observe that a call provides a zero payoff unless the price of the share *advances past the stated exercise price* ($50). If the market price of the share is below $50, no rational investor would exercise the option and pay $50 to buy the share—it would be cheaper to simply buy it in the open market. Also, because it costs $5000 to buy the call, the share has to move up another five points (from $50 to $55) in order for you to recover the premium and thereby reach a breakeven point. Note, however, that even if the share price is between $50 and $55, it's still best to exercise the option because doing so reduces the option holder's net loss. For example, if the share price is $52, exercising the option generates a cash inflow of $2000, which *partially offsets* the $5000 option premium. For each dollar by which the share price exceeds this

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 14.2 The Valuation Properties of Put and Call Options

The payoff of a call or put depends on the price of the underlying share (or other financial asset). The cost of the option has been recovered when the option passes its breakeven point. After that, the profit potential of a call is unlimited, but the profit potential of a put is limited because the underlying share price cannot go lower than $0.



breakeven point ($55), the call option's payoff goes up by $1000. The potential profit from the call position is unlimited because there is no limit on how high the underlying share price can go.

The value of a put is also derived from the price of the underlying share, except that the put value goes up when the share price goes down and vice versa. The *put* diagram in Figure 14.2 assumes you buy a put for $5000 and obtain the right to sell the underlying share at $50 a share. It shows that the payoff of the put is zero unless the market price of the corresponding share *drops below the exercise price* ($50) on the put. As the price of the share continues to fall, the payoff of the put option increases. Again, note that because the put cost $5000, you don't start making money on the investment until the price of the share drops below the breakeven point of $45 a share. Beyond that point, the profit from the put is defined by the extent to which the price of the underlying share continues to fall over the remaining life of the option.

Intrinsic Value

As we have seen, the payoff of a put or call depends ultimately on the exercise price stated on the option, as well as on the prevailing market price of the underlying share.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

More specifically, the *intrinsic value of a call* is determined according to the following simple formula:

Equation 14.1

$$\text{Intrinsic value of a call} = (\text{Share price} - \text{Strike price}) \times 1000^{*} \text{ or zero, whichever is greater}$$

In other words, the intrinsic value of a call is merely the difference between the share's market price and the option's strike price. When the share price is below the strike price, the intrinsic value is zero. As implied in Equation 14.1, a call has an intrinsic value whenever the market price of the underlying financial asset exceeds the strike price stipulated on the call. If a call option has a strike price of $50 and the underlying share sells for $60, then the option's intrinsic value is $10 000.

A put, on the other hand, cannot be valued in the same way, because puts and calls allow the holder to do different things. To find the *intrinsic value of a put,* we must change the order of the equation a bit:

Equation 14.2

$$\text{Intrinsic value of a put} = (\text{Strike price} - \text{Share price}) \times 1000^{*} \text{ or zero, whichever is greater}$$

In this case, a put has value so long as the market price of the underlying share (or financial asset) is less than the strike price stipulated on the put.

in-the-money
a call option with a strike price less than the market price of the underlying security; a put option with a strike price greater than the market price of the underlying security.

out-of-the-money
a call option with no real value because the strike price exceeds the market price of the underlying security; a put option with a market price that exceeds the strike price.

In-the-Money/Out-of-the-Money When a call has a strike price that is *less than* the market price of the underlying share, it has a positive intrinsic value and is known as an **in-the-money** option. When the strike price of the call *exceeds* the market price of the share, the call has no intrinsic value, in which case it is known as an **out-of-the-money** option. However, an out-of-the-money call option is not worthless as long as there is still time before it expires because there is a chance that the share price will fall below the strike price in the future. In other words, when a call is out of the money, its intrinsic value is zero but its market value is greater than zero. In such a case, we say that the option has no intrinsic value but it still has time value. In the special case when the strike price of the option and the market price of the share are the same, we say that the call option is *at-the-money*.

As you might expect, the situation is reversed for put options: a put is in-the-money when its strike price is greater than the market price of the share. It's considered out-of-the-money when the market price of the share exceeds the strike price, and a put is at-the-money when the strike price equals the share price. As with calls, an out-of-the-money put still has a positive market value as long as there is some time remaining before the expiration date.

When companies grant share options to their employees, they typically grant at-the-money options, meaning that the strike prices of the options are set equal to the price of the underlying share on the date of the option grant. However, as the Ethics in Investing box on page 476 explains, many companies got into trouble for using a bit of hindsight (and failing to disclose that) when selecting their option grant dates. This practice came to be known as 'options backdating'.

Time Value and Option Prices Put and call intrinsic values, as found according to Equations 14.1 and 14.2, denote what an option should be worth, *in the absence of*

* Each option contract on the ASX is for 1000 shares. Other exchanges have contracts for 100 shares. Both size contracts are used in this chapter, and Equations 14.1 and 14.2 will have a multiple of 1000 or 100 according to the contract on the underlying shares.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

ETHICS IN INVESTING

Extraordinarily Good Timing

In 1997, a finance professor conducting research on executive share option grants in the United States discovered that companies awarding these grants seemed to display extraordinarily good timing, setting the exercise prices just before a large run-up in the share price. Perhaps companies were withholding good news until after they awarded share option grants, knowing that when they released the news their share prices would rise. A few years later, Erik Lie and Randall Heron solved the puzzle of executives' remarkable timing abilities. Some companies apparently backdated their option grants, using hindsight to set the exercise price on the one date in the previous several weeks when their share price was at its lowest point. Backdating works like this. A company announces on 1 June that it had granted its executives share options on 15 April, using the market price of the share that day as the option's exercise price. In fact, the company did not actually award the options on 15 April, but rather chose that date several weeks later. That gave the company the benefit of hindsight, meaning that the company knew that the share's lowest point in the previous month or two had in fact been 15 April. By the time the company announced the option grant on 1 June, the options were already in-the-money because the share price was much higher than it had been on the retroactively set grant date. In backdating options, companies failed to disclose the true value of the option grants they awarded, which in turn affected their reported earnings and taxes.

As of mid-2007, at least 257 companies had either launched their own internal investigations into options backdating or had been the subject of investigations by the Securities and Exchange Commission. Companies in the United States involved in options backdating scandals endured serious consequences. Some executives paid fines or went to prison. Other firms settled lawsuits without admitting wrongdoing, such as Broadcom, which paid $118 million to settle a shareholder lawsuit. Most of the companies investigated saw their share prices decline by as much as 7–10%.

In Australia, corporate governance and ethical requirements generally prevent backdating and retrospectivity adjustments on options for executive compensation arrangements.

(*Source:* Adapted from Kenneth Carow, Randall Heron, Erik Lie, and Robert Neal 2009, 'Option Grant Backdating Investigations and Capital Market Discipline', *Journal of Corporate Finance,* December, Volume 15, Issue 5, pp 562–572.)

any time value. In other words, these equations show what call and put options would be worth on their expiration dates. In fact, options rarely trade at their intrinsic values. Instead, they almost always trade at prices that exceed their intrinsic values, especially for options that still have a long time to run. Thus, puts and calls nearly always have time value. In most cases, the more time there is before an option expires, the greater is its time value.

What Drives Options Prices?

Option prices can be reduced to two separate components. The first is the *intrinsic* value of the option, which is driven by the current market price of the underlying financial asset. As we saw in Equations 14.1 and 14.2, the greater the difference between the market price of the underlying asset and the strike price on the option, the greater the fundamental value of the call or put.

time value
the amount by which an option's price exceeds its intrinsic value.

The second component of an option price is customarily referred to as the **time value**. It represents the amount by which an option's price exceeds its intrinsic value. Table 14.1 lists some quoted prices for an actively traded call option. These quoted prices (panel A) are then separated into intrinsic value (panel B) and time value (panel C). Note that three strike prices are used—$65, $70 and $75. Relative to the market price of the share ($71.75), one strike price ($65) is well below market; this is an in-the-money call. One ($70) is fairly near the market. The third ($75) is well above the market; this is an out-of-the-money call. Note the considerable difference in the makeup of the options prices as we move from an in-the-money call to an out-of-the-money call.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 14.1 Option Price Components for an Actively Traded Call Option

Price	Strike Price	Expiration Months		
		February	March	June
Panel A: Quoted Options Prices				
71.75	65	—	7.75	9.75
71.75	70	2.25	3.88	6.75
71.75	75	0.19	1.50	3.88
Panel B: Underlying Fundamental Values				
71.75	65	—	6.75	6.75
71.75	70	1.75	1.75	1.75
71.75	75	neg.	neg.	neg.
Panel C: Time Premiums				
71.75	65	—	1.00	3.00
71.75	70	0.50	2.12	5.00
71.75	75	0.19	1.50	3.88

Note: 'neg.' indicates that options have negative fundamental values.

Panel B in the table lists the intrinsic values of the call options, as determined by Equation 14.1 for a contract of 100 shares. For example, note that although the March 65 call (the call with the March expiration date and $65 strike price) is trading at 71.75, its intrinsic value is only 6.75. The intrinsic value (of 6.75) represents, in effect, the extent to which the option is trading in-the-money. But observe that although most of the price of the March 65 call is made up of intrinsic value, not all of it is. Now look at the calls with the $75 strike price. None of these has any fundamental value; they're all out-of-the-money, and their prices are made up solely of time value. In essence, the value of these options is determined entirely by the *belief* that the price of the underlying share could rise to over $75 a share before the options expire.

Panel C shows the amount of *time value* embedded in the call prices. This represents the difference between the *quoted call price* (panel A) and the call's *intrinsic value* (panel B). It shows that the price of just about every traded option contains at least some time value. Indeed, unless the options are about to expire, you would expect them to have at least some time value. Also, note that with all three strike prices, *the longer the time to expiration, the greater the time value.*

As you might expect, *time to expiration* is an important element in explaining the time value in panel C. Several other variables also have a bearing on the behaviour of this premium. One is the *price volatility of the underlying share.* Other things being equal, the more volatile the share is, the more it enhances the speculative appeal of the option—and therefore the bigger the time value. In addition, the time value is *directly related to the level of interest rates.* That is, the amount of time value embedded in a call option generally increases along with interest rates (and for puts, time value increases when interest rates fall).

For the most part, then, four major forces drive the price of an option. They are, in descending order of importance: (1) the price behaviour of the underlying financial asset, (2) the amount of time remaining to expiration, (3) the amount of price volatility in the underlying financial asset, and (4) the general level of interest rates. Less important variables include the dividend yield on the underlying share and the trading volume of the option.

Option-Pricing Models Some fairly sophisticated option-pricing models have been developed, notably by Myron Scholes and the late Fisher Black, to value options. Many active

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

options traders use these formulas to identify and trade over- and undervalued options. Not surprisingly, these models are based on the same variables we identified above. For example, the five inputs used in the Black-Scholes option-pricing model are (1) the market price of the underlying share, (2) the strike price of the option, (3) the time remaining before the option expires, (4) the risk-free rate of interest, and (5) the volatility of the underlying share. The Black-Scholes option-pricing model prices a *European call* option using these equations:

Equation 14.3

$$\text{Call price} = (\text{Share price}) \times (\text{Probability 1}) - (\text{Present value of strike price}) \times (\text{Probability 2})$$

To get probability 1 and probability 2, you need two more equations, plus a little help from Excel.

The first equation looks like this

Equation 14.3a

$$\text{Value 1} = \frac{\text{Natural log of}\left(\frac{\text{Share price}}{\text{Strike price}}\right) + \left(\text{Risk-free rate} + \frac{(\text{Standard deviation})^2}{2}\right)(\text{Time to expiration})}{(\text{Standard deviation})\sqrt{\text{Time to expiration}}}$$

And the second equation is

Equation 14.3b

$$\text{Value 2} = \text{Value 1} - (\text{Standard deviation}) \times \sqrt{\text{Time to expiration}}$$

Equations 14.3a and 14.3b calculate numerical values that must then be converted into probabilities using the standard normal distribution function. The normal distribution is simply the familiar bell curve, and the standard normal distribution is a bell curve with a mean of zero and a standard deviation of one. The probabilities we need in Equation 14.3 represent the likelihood of drawing a number less than or equal to value 1 (and value 2) from this distribution. Figure 14.3 provides a graphical illustration of the probability that we seek. Suppose we use Equation 14.3a and find that value 1 equals 0.9. To obtain 'probability 1' for Equation 14.3 we need to know the area under the curve in Figure 14.3 to the left of the value 0.9.

Fortunately, Excel provides a useful function that makes it easy to calculate these standard normal probabilities. That function is denoted with =normsdist(0.9), and Excel reveals that the appropriate probability is 0.8159.

Now we are ready to price a call option using Black and Scholes. Suppose we want to price a call option that expires in three months (one-quarter of a year). The option has a strike price of $45, and the market price of the underlying share is currently $44. The standard deviation of this share's returns is about 50% per year, and the risk-free rate is 2%. With all of this information in hand, we can price the option. Start by solving for the quantities value 1 and value 2.

$$\text{Value 1} = \frac{\ln\left(\frac{44}{45}\right) + \left(0.02 + \frac{0.50^2}{2}\right)0.25}{0.50\sqrt{0.25}} = \frac{-0.0225 + (0.145)0.25}{0.25} = \underline{0.0551}$$

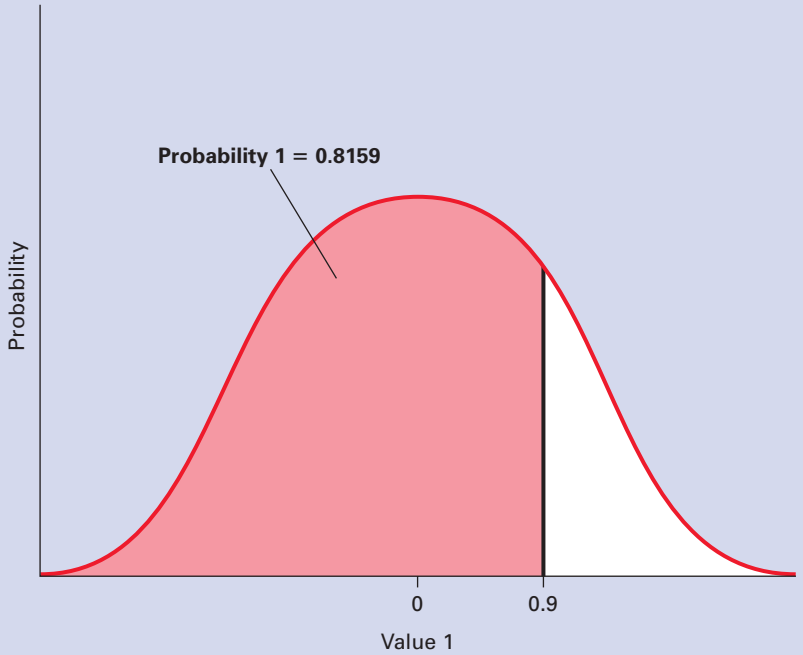
$$\text{Value 2} = 0.0551 - 0.50\sqrt{0.25} = \underline{-0.1949}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 14.3

The Standard Normal Distribution

The standard normal distribution has a zero mean and a standard deviation of one. The shaded area to the left of value 1 represents the probability of drawing a value at random from this distribution that is less than or equal to value 1.



INVESTOR FACTS

OPTION PRICING MODELS ON THE WEB—A number of websites provide access to models that will calculate the theoretical value of both call and put options. Many of these can be found by using a good search engine and typing in 'options pricing model'. The ASX website under 'Education and Resources' and 'Calculators' will provide access to a calculator for Australian traded options.

Next, use Excel to find the standard normal probabilities attached to these values:

$$\text{Probability 1} = \text{normsdist}(0.0551) = 0.5220$$
$$\text{Probability 2} = \text{normsdist}(-0.1949) = 0.4227$$

Finally, plug the values for probability 1 and probability 2 into Equation 14.3 to obtain the call price.

$$\text{Call price} = \$44(0.5220) - [\$45 \div (1.02)^{0.25}](0.4227) = \$22.97 - \$18.93 = \underline{\underline{\$4.04}}.$$

So, according to the Black-Scholes option pricing model, the call should be priced at $4.04.

Trading Strategies

For the most part, investors can use share options in three different kinds of trading strategies: (1) buying puts and calls for speculation, (2) hedging with puts and calls, and (3) option writing and spreading.

Buying for Speculation Buying for speculation is the simplest and most straightforward use of puts and calls. Basically, it is like buying shares ('buy low, sell high') and, in fact, represents an alternative to investing in shares. For example, if you feel the market price of a particular share is going to move up, you can capture that price appreciation by buying a call on the share. In contrast, if you feel the share is about to drop in price, a put could convert that price decline into a profitable situation. In essence, investors buy options rather than shares whenever the options are likely to yield a greater return. The principle here, of course, is to get the biggest return from your investment dollar. Puts and calls often meet this objective because of the added leverage they offer.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Furthermore, options offer *valuable downside protection:* the most you can lose is the cost of the option, which is always less than the cost of the underlying share. Thus, by using options as a vehicle for speculation, you can put a cap on losses and still get almost as much profit potential as with the underlying share.

Speculating with Calls To illustrate the essentials of speculating with options, imagine that you own a share that you feel will move up in price over the next six months. What would happen if you were to buy a call on this share rather than investing directly in the share? To find out, let's see what the numbers show. The price of the share is now $49, and you anticipate that within six months, it will rise to about $65. You need to determine the expected return associated with each of your investment alternatives. Because (most) options have relatively short lives, and because we're dealing with an investment horizon of only six months, we can use holding period return to measure yield (see Chapter 4). Thus, if your expectations about the share are correct, it should go up by $16 a share and will provide you with a 33% holding period return: ($65 – $49) ÷ $49 = $16 ÷ $49 = 0.33.

But there are also some listed options available on this share. Let's see how they would do. For illustrative purposes, we will use two six-month calls that carry a $40 and a $50 strike price, respectively, and an options contract of 100 shares. Table 14.2 compares the behaviour of these two calls with the behaviour of the underlying share. Clearly, from a holding period return perspective, either call option represents a superior investment to buying the share itself. The dollar amount of profit may be a bit more with the share, but note that the size of the required investment ($4900) is a lot more too, so that alternative has the lowest HPR.

Observe that one of the calls is an in-the-money option (the one with the $40 strike price). The other is out-of-the-money. The difference in returns generated by these calls is rather typical. That is, investors are usually able to generate much better rates of return with lower-priced (out-of-the-money) options, but of course there is a greater risk that these options will expire worthless. A major drawback of out-of-the-money options is that their price is made up solely of investment premium—a sunk cost that will be lost if the share does not move in price.

TABLE 14.2 Speculating with Call Options

EXCEL With Spreadsheets

	100 Underlying Shares	Six-Month Call Options on the Share	
		$40 Strike Price	$50 Strike Price
Today			
Market value of share (at $49/share)	$4900		
Market price of calls*		$1100	$400
Six Months Later			
Expected value of share (at $65/share)	$6500		
Expected price of calls*		$2500	$1500
Profit	$1600	$1400	$1100
Holding Period Return**	**33%**	**127%**	**275%**

*The price of the calls was computed according to Equation 14.1. It includes some investment premium in the purchase price but none in the expected sales price.

**Holding period return (HPR) = (Ending price of the share or option − Beginning price of the share or option) ÷ Beginning price of the share or option.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Speculating with Puts To see how you can speculate in puts, consider the following situation. You're looking at a share that's now priced at $51, but you anticipate a drop in price to about $35 per share within the next six months. If that occurs, you could sell the share short and make a profit of $16 per share. (See Chapter 2, pages 41–42, for a discussion of short selling.)

Alternatively, you can purchase an out-of-the-money put (with a strike price of $50) for, say, $300. Again, if the price of the underlying share drops, you will make money with the put. The profit and rate of return on the put are summarised below, along with the comparative returns from short selling the share.

Comparative Performance Given Price of Share Moves from $51 to $35/Share over a Six-Month Period:	Buy 1 Put ($50 strike price)	Short Sell 100 Shares*
Purchase price (today)	$300	
Selling price (six months later)	1500**	
Short sell (today)		$5100
Cover (six months later)		3500
Profit	$1200	$1600
Holding period return	400%	63%†

*The contract is for 100, not 1000, shares in this illustration.
**The price of the put was computed according to Equation 14.2 and does not include any investment premium.
†Assumes the short sale was made with a required margin deposit of 50%.

Once again, in terms of holding period return, the share option is the superior investment vehicle by a wide margin.

Of course, not all option investments perform as well as the ones in our examples. Success with this strategy rests on picking the right underlying share. Thus, *security analysis and proper share selection are critical dimensions of this technique*. It is a highly risky investment strategy, but it may be well suited for the more speculatively inclined investor.

hedge
a combination of two or more securities into a single investment position for the purpose of reducing or eliminating risk.

Hedging: Modifying Risks A **hedge** is simply a combination of two or more securities into a single investment position for the purpose of reducing risk. Let's say you hold a share and want to reduce the amount of downside risk in this investment. You can do that by setting up a hedge. In essence, you're using the hedge as a way to *modify your exposure to risk*. To be more specific, you're trying to change not only the *chance of loss*, but also the *amount lost*, if the worst does occur. A simple hedge might involve nothing more than buying share and simultaneously buying a put on that same share. Or it might consist of selling some share short and then buying a call. There are many types of hedges, some of which are very simple and others very sophisticated. Investors use them for the same basic reason: to earn or protect a profit without exposing the investor to excessive loss.

An options hedge may be appropriate if you have generated a profit from an earlier share investment and wish to protect that profit. Or it may be appropriate if you are about to enter into a share investment and wish to protect your money by limiting potential capital loss. If you hold a share that has gone up in price, the purchase of a put would provide the type of downside protection you need; the purchase of a call, in contrast, would provide protection to a short seller of shares. Thus, option hedging always involves two transactions: (1) the initial share position (long or short), and (2) the simultaneous or subsequent purchase of the option.

Protective Puts: Limiting Capital Loss Let's examine a simple option hedge in which you use a put to limit your exposure to capital loss. Assume that you want to buy 100 shares. Being a bit apprehensive about the share's outlook, you decide to use an

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

option hedge to protect your capital against loss. Therefore, you simultaneously (1) buy the share and (2) buy a put on the share (which fully covers the 100 shares owned). This type of hedge is known as a *protective put*. Preferably, the put would be a low-priced option with a strike price at or near the current market price of the share. Suppose you purchase 100 shares at $25 a share and pay $150 for a put with a $25 strike price. Now, no matter what happens to the price of the share over the life of the put, *you can lose no more than $150*. At the same time, *there's no limit on the gains*. If the share does not move, you will be out the cost of a put. If it drops in price, then whatever is lost on the share will be made up with the put. The bottom line? The most you can lose is the cost of the put ($150, in this case). However, if the price of the share goes up (as hoped), the put becomes worthless, and you will earn the capital gains on the share (less the cost of the put, of course).

Table 14.3 shows the essentials of this option hedge. The $150 paid for the put is sunk cost. That's lost no matter what happens to the price of the share. In effect, it is the price paid for the insurance this hedge offers. Moreover, this hedge is good only for the life of the put. When this put expires, you will have to replace it with another put or forget about hedging your capital.

Protective Puts: Protecting Profits The other basic use of an option hedge involves entering into the options position *after* a profit has been made on the underlying share. This could be done because of investment uncertainty or for tax purposes (to carry over a profit to the next taxable year). For example, if you bought 100 shares at $35 and it moved to $75, there would be a profit of $40 per share to protect. You could protect the profit with an option hedge by buying a put. Assume you buy a three-month put with a $75 strike price at a cost of $250. Now, regardless of what happens to the price of the share over the life of the put, you are guaranteed a minimum profit of $3750 (the $4000 profit in the share made so far, less the $250 cost of the put). This can be seen in Table 14.4. Note that if the price of the share should fall, the worst that can happen is a guaranteed minimum profit of $3750. Plus, there is still *no limit on how much profit can be made*. As long as the share continues to go up, you will reap the benefits.

TABLE 14.3 Limiting Capital Loss with a Put Hedge EXCEL With Spreadsheets

		Share	Put*
Today			
Purchase price of the share		$25	
Purchase price of the put			$1.50
Sometime Later			
A. Price of share goes *up* to:		**$50**	
Value of put**			$ 0
Profit:			
100 shares ($50 − $25)	$2500		
Less: Cost of put	−150		
	Profit: $2350		
B. Price of share goes *down* to:		**$10**	
Value of put**			$15
Profit:			
100 shares (loss: $10 − $25)	−$1500		
Value of put (profit)	+1500		
Less: Cost of put	−150		
	Loss: $ 150		

*The put is purchased simultaneously and carries a strike price of $25.
**See Equation 14.2 (adjusted for 100 shares not 1000 shares, which is ASX standard contract).

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 14.4 Protecting Profits with a Put Hedge

EXCEL With Spreadsheets

		Share	Three-Month Put with a $75 Strike Price
Purchase price of the share		$ 35	
Today			
Market price of the share		$ 75	
Market price of the put			$2.50
Three Months Later			
A. Price of share goes up to:		**$100**	
Value of put*			$ 0
Profit:			
100 shares ($100 – $35)	$6500		
Less: Cost of put	−250		
Profit:	$6250		
B. Price of share goes *down* to:		**$ 50**	
Value of put*			$ 25
Profit:			
100 shares ($50 – $35)	$1500		
Value of put (profit)	2500		
Less: Cost of put	−250		
Profit:	$3750		

*See Equation 14.2 (adjusted for 100 rather than 1000 shares).

But watch out: *the cost of this kind of insurance can become very expensive just when it's needed the most*—that is, when market prices are falling. Under such circumstances, it's not uncommon to find put options trading at price premiums of 20–30%, or more, above their prevailing intrinsic values. Essentially, that means the price of the share position you're trying to protect has to fall 20–30% before the protection even starts to kick in. Clearly, as long as high option price premiums prevail, the hedging strategies described above are a lot less attractive. They still may prove to be helpful, but only for very wide swings in value—and for those that occur over fairly short periods of time, as defined by the life of the put option.

One final point: although the preceding discussion pertained to put hedges, call hedges can also be set up to limit the loss or protect a profit on a short sale. For example, when selling a share short, you can purchase a call to protect yourself against a rise in the price of the share—with the same basic results as outlined above.

Enhancing Returns: Options Writing and Spreading The advent of listed options has led to many intriguing options-trading strategies. Yet, despite the appeal of these techniques, there is one important point that all the experts agree on: *such specialised trading strategies should be left to experienced investors who fully understand their subtleties*. Our goal at this point is not to master these specialised strategies but to explain in general terms what they are and how they operate. We will look at two types of specialised options strategies here: (1) writing options, and (2) spreading options.

Writing Options Generally, investors write options because they believe the price of the underlying share is going to move in their favour. That is, it is not going to rise as much as the buyer of a call expects, nor will it fall as much as the buyer of a put hopes. *And more often than not, the option writer is right:* he or she makes money far more often than the buyer of the put or call. Such favourable odds explain, in part, the underlying

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

economic motivation for writing put and call options. Option writing represents an investment transaction to the writers: they receive the full option premium (less normal transaction costs) in exchange for agreeing to live up to the terms of the option.

naked options
options written on securities not owned by the writer.

Naked Options Investors can write options in one of two ways. One is to write **naked options**, which involves writing options on shares not owned by the writer. You simply write the put or call, collect the option premium, and hope the price of the underlying share does not move against you. If successful, naked writing can be highly profitable because it requires essentially no capital up front. Remember, though, that the amount of return to the writer is always limited to the amount of option premium received. On the other hand, there is really *no limit to loss exposure*. That's the catch: the price of the underlying share can rise or fall by just about any amount over the life of the option and, thus, can deal a real blow to the writer of a naked put or call.

covered options
options written against shares owned by the writer.

Covered Options The amount of risk exposure is a lot less for those who write **covered options**. That's because these options are written against shares the investor (writer) already owns or has a position in. For example, you could write a call against shares you own or write a put against shares you have short sold. You thus can use the long or short position to meet the terms of the option. Such a strategy is a fairly conservative way to generate attractive rates of return. The object is to write a *slightly* out-of-the-money option, pocket the option premium, and hope the price of the underlying share will move up or down to (but not exceed) the option's strike price. In effect, you are adding an option premium to the other usual sources of return (dividends and/or capital gains). But there's more: while the option premium adds to the return, it also reduces risk. It can cushion a loss if the price of the share moves against the investor.

There is a hitch to all this, of course: *the amount of return the covered option investor can realise is limited*. Once the price of the underlying share exceeds the strike price on the option, the option becomes valuable. When that happens, *you start to lose money on the options*. From this point on, for every dollar you make on the share position, you lose an equal amount on the option position. That's a major risk of writing covered call options—if the price of the underlying share takes off, you'll miss out on the added profits.

To illustrate the ins and outs of *covered call writing*, let's assume you own 100 shares of PFP, an actively traded, high-yielding share. The share is currently trading at $73.50 and pays *quarterly* dividends of $1 a share. You decide to write a three-month call on PFP, giving the buyer the right to take the share off your hands at $80 a share. Such options are trading in the market at 2.50, so you receive $250 for writing the call. You fully intend to hold on to the share, so you'd like to see the price of PFP share rise to no more than 80 by the expiration date on the call. If that happens, the call option will expire worthless. As a result, not only will you earn the dividends and capital gains on the share, but you also get to pocket the $250 you received when you wrote the call. Basically, *you've just added $250 to the quarterly return on your share*.

Table 14.5 summarises the profit and loss characteristics of this covered call position. Note that the maximum profit on this transaction occurs *when the market price of the share equals the strike price on the call*. If the price of the share keeps going up, you miss out on the added profits. Even so, the $1000 profit you earn at a share price of 80 or above translates into a (three-month) holding period return of 13.6% ($1000 ÷ $7350). This represents an *annualised* return of nearly 55%! With this kind of return potential, it's not difficult to see why covered call writing is so popular. Moreover, as *situation D* in the table illustrates, covered call writing adds a little cushion to losses: the price of the share has to drop more than 2½ points (which is what you received when you wrote/sold the call) before you start losing money.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 14.5 Covered Call Writing

EXCEL With Spreadsheets

		Share	Three-Month Put with a $75 Strike Price
Current market price of the share		$73.50	
Current market price of the call			$2.50
Three Months Later			
A. Price of the share is *unchanged*:		**$73.50**	
Value of the call*			$0
Profit:			
Quarterly dividends received	$ 100		
Proceeds from sale of call	250		
Total profit:	$ 350		
B. Price of the share goes up to:		**$80**	Price where maximum profit occurs
Value of the call*			$0
Profit:			
Quarterly dividends received	$ 100		
Proceeds from sale of call	250		
Capital gains on share ($80 − $73.50)	650		
Total profit:	$1000		
C. Price of the share goes up to:		**$90**	
Value of the call*			$10
Profit:			
Quarterly dividends received	$ 100		
Proceeds from sale of call	250		
Capital gains on share ($90 − $73.50)	1650		
Less: Loss on call	(1000)		
Net profit:	$1000		
D. Price of the share drops to:		**$71**	Breakeven price
Value of the call*			$0
Profit:			
Capital loss on share ($71 − $73.50)	($ 250)	$ 0 profit or loss	
Proceeds from sale of call	250		
Quarterly dividends	100		
Net profit:	$ 100		

*See Equation 14.1 (adjusted for 100 rather than 1000 shares).

Besides covered calls and protective puts, there are many different ways of combining options with other types of securities to achieve a given investment objective. Probably none is more unusual than the creation of so-called *synthetic securities*. A case in point: say you want to buy a convertible bond on a certain company, but that company doesn't have any convertibles issued. You can create your own customised convertible by combining a straight (non-convertible) bond with a listed call option on your targeted company.

option spreading
combining two or more options with different strike prices and/or expiration dates into a single transaction.

Spreading Options **Option spreading** is nothing more than the combination of two or more options into a single transaction. You could create an option spread, for example, by simultaneously buying and writing options on the same underlying share. These would not be identical options; they would differ with respect to strike price and/or expiration date. Spreads are a very popular use of listed options, and they account for a substantial amount of the trading activity on the listed options exchanges. These

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

spreads go by a variety of exotic names, such as *bull spreads, bear spreads, money spreads, vertical spreads* and *butterfly spreads*. Each spread is different and each is constructed to meet a certain type of investment goal.

Consider, for example, a *vertical spread*. It would be set up by *buying* a call at one strike price and then *writing* a call (on the same share and for the same expiration date) at a higher strike price. For instance, you could buy a February call on XYZ at a strike price of, say, 30 and simultaneously sell (write) a February call on XYZ at a strike price of 35. Strange as it may sound, such a position would generate a hefty return if the price of the underlying share went up by just a few points. Other spreads are used to profit from a falling market. Still others try to make money when the price of the underlying share moves either up *or* down.

Whatever the objective, most spreads are created to take advantage of differences in prevailing option prices. The payoff from spreading is usually substantial, but *so is the risk*. In fact, some spreads that seem to involve almost no risk may end up with devastating results if the market and the difference between option premiums move against the investor.

option straddle
the simultaneous purchase (or sale) of a put and a call on the same underlying ordinary share (or financial asset).

Option Straddles A variation on this theme involves an **option straddle**. This is the simultaneous purchase (or sale) of *both* a put *and* a call on the *same* underlying share. Unlike spreads, straddles normally involve the same strike price and expiration date. Here, the object is to earn a profit from *either* a big or a small swing in the price of the underlying share.

For example, in a *long straddle*, you *buy* an equal number of puts and calls. You make money in a long straddle when the underlying share undergoes a big change in price—either up or down. If the price of the share shoots way up, you make money on the call side of the straddle but are out the cost of the puts. If the price of the share plummets, you make money on the puts, but the calls are useless. In either case, so long as you make more money on one side than the cost of the options for the other side, you're ahead of the game.

In a similar fashion, in a *short straddle,* you *sell/write* an equal number of puts and calls. You make money in this position *when the price of the underlying share goes nowhere*. In effect, you get to keep all or most of the option premiums you collected when you wrote the options.

Except for obvious structural differences, the principles that underlie the creation of straddles are much like those for spreads. The object is to combine options that will enable you to capture the benefits of certain types of share price behaviour. But keep in mind that if the prices of the underlying share and/or the option premiums do not behave in the anticipated manner, you lose. *Spreads and straddles are extremely tricky and should be used only by knowledgeable investors.*

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

14.7 Briefly explain how you would make money on (a) a *call option* and (b) a *put option*. Do you have to exercise the option to capture the profit?

14.8 How do you find the intrinsic (fundamental) value of a call? Of a put? Does an *out-of-the-money option* have intrinsic value?

14.9 Name at least four variables that affect the price behaviour of listed options, and briefly explain how each affects prices. How important are fundamental (intrinsic) value and time value (a) to in-the-money options, and (b) to out-of-the-money options?

14.10 Describe at least three different ways in which investors can use share options.

14.11 What's the most that can be made from writing calls? Why would an investor want to write *covered calls*? Explain how you can reduce the risk on an underlying share by writing covered calls.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Share-Index and Other Types of Options

LG 6

Imagine being able to buy or sell a major sharemarket index like the ASX 200—and at a reasonable cost. Think of what you could do: if you felt the market was heading up, you could invest in a security that tracks the price behaviour of the index and make money when the market goes up. No longer would you have to go through the process of selecting specific shares that you hope will capture the market's performance. Rather, you could play the *market as a whole*. That's exactly what you can do with *share-index options*—puts and calls that are written on major share market indices. Index options have become immensely popular with both individual and institutional investors. Here we will take a closer look at these popular and often highly profitable investment vehicles.

Share-Index Options: Contract Provisions

share-index option
a put or call option written on a specific sharemarket index, such as the ASX 200.

Basically, a **share-index option** is nothing more than a put or call written on a specific sharemarket index. The underlying security in this case is the specific market index. Thus, when the market index moves in one direction or another, the value of the index option moves accordingly. Because there are no shares or other financial assets backing these options, settlement is defined in terms of cash. Specifically, the face value of an *index option* is equal to 10 times the published market index that underlies the option. For example, if the ASX 200 is at 3150, then the face value of an ASX 200 option will be $\$10 \times 3150 = \$31\,500$. If the underlying index moves up or down in the market, so will the face value of the option.

Both put and call options are available on the ASX 200. See Figure 14.4 for the quotation system for index options. They are valued and have issue characteristics like any other put or call. That is, a put lets a holder profit from a drop in the market (when the underlying market index goes down, the value of a put goes up); a call enables the holder to profit from a market that is rising.

Investment Uses

Although index options, like equity options, can be used in spreads, straddles or even covered calls, they are perhaps used most often for speculating or for hedging. When used as a speculative vehicle, index options give investors an opportunity to play the market as a whole, with a relatively small amount of capital. Like any other put or call, index options provide attractive *leverage opportunities* and at the same time *limit exposure to loss* to the price paid for the option.

Index Options as Hedging Vehicles Index options are equally effective as *hedging vehicles*. In fact, hedging is a major use of index options and accounts for a good deal of the trading in these securities. To see how these options can be used for hedging, assume that you hold a diversified portfolio of, say, a dozen different shares and you think the market is heading down. One way to protect your capital would be to sell all of your shares. However, that could be expensive, especially if you plan to get back into the market after it drops, and it could lead to a good deal of unnecessary taxes. Fortunately, there is a way to 'have your cake and eat it too', and that is to hedge your share portfolio with a share index put. In this way, if the market does go down, you'll make money on your puts, which you then can use to buy more shares at the lower prices. On the other hand, if the market continues to go up, you'll be out *only the cost of the puts*. That amount could well be recovered from the increased value of your

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 14.4

Quotations on Index Options

The quotation system used with index options is a lot like that used with share options: strike prices and expiration dates are shown along with closing option prices.

(*Source: Australian Financial Review,* 26 May 2010, p. 43. Courtesy of the *Australian Financial Review.*)

INDEX OPTIONS

Stock	Ex Price	Fair Value	Last Sale	Vol Ctrs	Open Int	Implied Volatility	Delta	Annual % Return
S&P/ASX 200 Call (value in index points, 1pt = $10)								
Jun 10	1.00	42.70	42.72	155	4604	-	-	-
Jun 10	3900	4.16	4.26	99	422	40.80	-	-
Jun 10	4000	3.34	3.39	54	1657	38.90	-	-
Jun 10	4100	2.56	2.56	314	886	36.70	-	-
Jun 10	4200	1.86	1.84	13	756	34.40	-	-
Jun 10	4300	1.27	1.27	487	1012	32.40	-	-
Jun 10	4350	1.02	1.03	214	886	31.70	-	-
Jun 10	4400	.78	.79	669	1678	30.30	-	-
Jun 10	4500	.45	.45	1207	4441	28.90	-	-
Jun 10	4525	.39	.42	155	284	28.60	-	-
S&P/ASX 200 Put (value in index points, 1pt = $10)								
Jun 10	2800	.00	.01	30	163	60.50	-	-
Jun 10	3200	.05	.05	29	867	59.00	-	-
Jun 10	3300	.06	.06	20	715	55.30	-	-
Jun 10	3400	.09	.08	271	449	53.30	-	-
Jun 10	3500	.14	.14	744	1732	52.10	-	-
Jun 10	3600	.19	.10	20	1278	49.50	-	-
Jun 10	3700	.24	.23	881	2051	46.70	-	-
Jun 10	3800	.31	.37	1011	2268	43.50	-	-
Jun 10	3900	.45	.48	2418	3011	41.80	-	-

shareholdings. The principles of hedging with share-index options are exactly the same as those for hedging with equity options. The only difference is that with share-index options, you're trying to protect a *whole portfolio of shares* rather than *individual* shares.

Like hedging with individual equity options, the cost of protecting your portfolio with index options can become very expensive (with price premiums of 20–30%, or more) when markets are falling and the need for this type of portfolio insurance is the greatest. That, of course, will have an impact on the effectiveness of this strategy.

Also, the amount of profit you make or the protection you obtain depends in large part on how closely the behaviour of your share portfolio is matched by the behaviour of the share-index option you employ. *There is no guarantee that the two will behave in the same way.* You should therefore select an index option that closely reflects the nature of the share in your portfolio.

A Word of Caution Given their effectiveness for either speculating or hedging, it's little wonder that index options have become popular with investors. But a word of caution is in order: although trading index options appears simple and seems to provide high rates of return, these vehicles involve *high risk* and are subject to considerable price volatility. They should not be used by amateurs. True, there's only so much you can lose with these options. The trouble is that it's very easy to lose that amount. These securities are not investments that you can buy and then forget about until just before

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

they expire. With the wide market swings that are so common today, you must *monitor these securities on a daily basis.*

Other Types of Options

Options on shares and share indices account for most of the market activity in listed options. But you also can obtain put and call options on various other securities. Let's now take a brief look at these other kinds of options, starting with options on ETFs.

Options on Exchange-Traded Funds In addition to various market indices, put and call options are also available on *exchange-traded funds (ETFs)*. As more fully explained in Chapter 12, ETFs are like managed funds that have been structured to track the performance of a wide range of market indices—in other words, *ETFs are a type of index fund.*

There's a good deal of overlap in the markets and market segments covered by index options and ETF options. In addition to their similar market coverage, they perform very much the same in the market, are valued the same, and are used for many of the same reasons (particularly for speculation and hedging). After all, an ETF option is written on an underlying *index fund* (for example, one that tracks the ASX 200) just like an index option is written on the same underlying *market index* (the ASX 200). Both do pretty much the same thing—either directly or indirectly track the performance of a market measure—so of course they should behave in the same way.

interest rate options
put and call options on fixed-income (debt) securities.

Interest Rate Options Puts and calls on fixed-income (debt) securities are known as **interest rate options**. Interest rate options can be written on Treasury securities. They track the yield behaviour of the underlying Treasury security (rather than the price behaviour). Interest rate options are set up to react to *the yield of the underlying Treasury security.* Thus, when yields rise, the value of a call goes up. When yields fall, puts go up in value. In effect, because bond prices and yields move in opposite directions, the value of an interest rate call option goes up at the very time that the price (or value) of the underlying debt security is going down. (The opposite is true for puts.) This unusual characteristic may explain why the market for interest rate options remains very small. Most professional investors simply don't care for interest rate options. Instead, they prefer to use interest rate futures contracts or options on these futures contracts (both of which we will examine in Chapter 15).

currency options
put and call options written on foreign currencies.

Currency Options Foreign exchange options, or **currency options** as they're more commonly called, provide a way for investors to speculate on foreign exchange rates or to hedge foreign currency or foreign security holdings. Currency options are available on the currencies of most of the countries with which Australia has strong trading ties.

Puts and calls on foreign currencies give the holders the right to sell or buy large amounts of the specified currency. However, in contrast to the standardised contracts used with share and share-index options, the specific unit of trading in this market varies with the particular underlying currency.

The value of a currency option is linked to the exchange rate between the Australian dollar and the underlying foreign currency. For example, if the Canadian dollar becomes stronger *relative to the Australian dollar,* causing the exchange rate to go up, the price of a *call* option on the Canadian dollar will increase, and the price of a *put* will decline.

The strike price on a currency option is stated in terms of *exchange rates*. Success in forecasting movements in foreign exchange rates is obviously essential to a profitable foreign currency options program.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LEPOs
low exercise price options; highly leveraged European call options on individual shares.

LEPOS **Low exercise price options (LEPOs)** are highly leveraged European call options on individual shares. They have an exercise price of 1 cent each. LEPOs have traded on the ASX since 1995. LEPOs differ from standard exchange-traded options in that the full amount of the premium is not paid up front—only 1 cent is paid—and a margin is paid during the life of the LEPO. The balance of the premium is paid if and when the LEPO is exercised. The advantage of a LEPO is that you only pay a margin up front, rather than the full option premium (price). The low-cost nature of these options makes them attractive to investors who are prepared to take on greater risk, with the potential for higher returns.

Contracts for Difference

contracts for difference
contract requiring investors to put up a small amount of capital to place a much larger bet on the market price of a share or commodity, or the value of an index or exchange rate.

Contracts for difference (CFD) are a relatively new form of derivative, traded over the counter (OTC), which means that trading and price information occurs between investors and individual CFD issuers rather than on an exchange (e.g. the ASX). Investors can take long or short positions.

A CFD is a contract requiring investors to put up a small amount of capital to place a much larger (leveraged) bet on the market price of a share or commodity or the value of an index or an exchange rate. Investors invest in a contract only with an issuer, where the value of the contract moves in line with changes in the value of the share, index or tradeable asset.

To illustrate: with a CFD (based on share price) that requires a 5% margin to open a trade, for example, a 5% increase in the market price of the underlying share results in a 100% return on the investor's capital—assuming the CFD issuer meets its counterparty obligation. However, if there is a 5% fall in the market price of the share, a 100% loss results for the investor, before trading costs.

CFD investors, as with other OTC investments, rely on the issuer to meet obligations such as crediting gains and other payments when due, processing trades and releasing money from a client's account. The collapse of a CFD issuer in 2010, Sonray Capital Markets, highlights the danger facing CFD investors.

ASIC is monitoring CFD issuers' operations, and market surveillance is undertaken. Improvements in product disclosure statements (PDS) required to be supplied by CFD issuers are underway, and new disclosure benchmarks will be set to offer more guidance to potential investors. ASIC's website updates CFD developments.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

14.12 Briefly describe the differences and similarities between *share-index options* and *share options*.

14.13 Identify and briefly discuss two different ways to use share-index options. Do the same for foreign currency options.

14.14 Why would an investor want to use index options to hedge a portfolio of shares?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know	Key Terms
LG 1 Discuss the basic nature of options in general and puts and calls in particular and understand how these investment vehicles work. An option gives the holder the right to buy or sell a certain amount of some real or financial asset at a set price for a set period of time. Puts and calls are the most widely used type of option. These derivative securities offer considerable leverage potential. A put enables the holder to *sell* a certain amount of a specified security at a specified price over a specified time period. A call gives the holder the right to *buy* the security at a specified price over a specified period of time.	call, *p. 467* derivative securities, *p. 467* leverage, *p. 468* option, *p. 467* option premium, *p. 468* option writer (or seller), *p. 468* put, *p. 467*
LG 2 Describe the options market and note key options provisions, including strike prices and expiration dates. The options market is made up of conventional (OTC) options and listed options. OTC options are used predominantly by institutional investors. Listed options are traded on organised exchanges. The creation of listed options exchanges led to standardised options features and to widespread use of options by individual investors. Among the option provisions are the strike price (the stipulated price at which the underlying asset can be bought or sold) and the expiration date (the date when the contract expires).	conventional options, *p. 470* expiration date, *p. 471* listed options, *p. 470* strike price, *p. 471*
LG 3 Explain how put and call options are valued and the forces that drive options prices in the marketplace. The value of a call is the market price of the underlying security less the strike price on the call. The value of a put is its strike price less the market price of the security. The value of an option is driven by the current market price of the underlying asset. Most puts and calls sell at premium prices. The size of the premium depends on the length of the option contract (the so-called time premium), the speculative appeal and amount of price volatility in the underlying financial asset, and the general level of interest rates.	in-the-money, *p. 475* out-of-the money, *p. 475* time value, *p. 476*
LG 4 Describe the profit potential of puts and calls and note some popular put and call investment strategies. Investors who hold puts make money when the value of the underlying asset goes down over time. Call investors make money when the underlying asset moves up in price. Aggressive investors will use puts and calls either for speculation or in highly specialised writing and spreading programs. Conservative investors like the low unit costs and the limited risk that puts and calls offer in absolute dollar terms. Conservative investors often use options to hedge positions in other securities.	hedge, *p. 481*
LG 5 Explain the profit potential and loss exposure from writing covered call options and discuss how writing options can be used as a strategy for enhancing investment returns. Covered call writers have limited loss exposure because they write options against securities they already own. The maximum profit occurs when the price of the share equals the strike price of the call. If the share price goes above the strike price, then any loss on the option is offset by a gain on the share position. If the share	covered options, *p. 484* naked options, *p. 484* option spreading, *p. 485* option straddle, *p. 486*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
price goes down, part of the loss on the share is offset by the proceeds from the call option. Option writing can be combined with other securities to create investment strategies for specific market conditions.	
LG6 **Describe market index options, puts and calls on foreign currencies and discuss how these securities can be used by investors.** Standardised put and call options are available on sharemarket indices, like the ASX 200 (in the form of index options or ETF options), and on a number of foreign currencies (currency options).	contracts for difference, *p. 490* currency options, *p. 489* interest rate options, *p. 489* LEPOS, *p. 490* share-index option, *p. 487*

Discussion Questions

LG2 **Q14.1** Review the ASX website and examine the information provided on options and options trading. What information is supplied, and what is useful to understanding options trading?

LG5 **Q14.2** Alcan shares recently closed at $52.51. Assume that you write a covered call on Alcan by writing one September *call* with a strike price of $55, and buying 1000 shares at the market price. The option premium that you obtain from writing the call is $3700. Assume the share will pay no dividends between now and the expiration date of the option.

a. What is the total profit if the share price remains unchanged?
b. What is the total profit if the share price goes up to $55?
c. What is the total loss if the share price goes down to $49?

LG6 **Q14.3** Assume you hold a well-balanced portfolio of shares.

a. Under what conditions might you want to use a share-index (or ETF) option to hedge the portfolio?
b. Briefly explain how such options could be used to hedge a portfolio against a drop in the market.
c. Discuss what happens if the market does, in fact, go down.
d. What happens if the market goes up instead?

LG3 LG4 **Q14.4** Using the resources available at your campus or the Internet, complete each of the following tasks. (*Note:* Show your work for all calculations.)

a. Find an *in-the-money call* that has two or three months to expiration. (Select an *equity option* that is at least $2 or $3 in-the-money.) What's the fundamental value of this option and how much premium is it carrying? Using the current market price of the underlying share (the one listed with the option), determine what kind of dollar and percentage return the option would generate if the underlying share goes up by 10%. How about if the share goes down by 10%?
b. Repeat part **a**, but this time use an *in-the-money put* that has two or three months to expiration. Answer the same questions as above.

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG3 **P14.1** Cisco is selling for $19. Call options with an $18 exercise price are priced at $2.50. What is the intrinsic value of the option, and what is the time value?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG3 **P14.2** Gillette is trading at $31.11. Call options with a strike price of $35 are priced at $0.30. What is the intrinsic value of the option, and what is the time value?

LG3 **P14.3** Verizon is trading at $36. Put options with a strike price of $45 are priced at $10.50. What is the intrinsic value of the option, and what is the time value?

LG3 **P14.4** Crew is trading at $36. Put options with a strike price of $27.50 are priced at $0.85. What is the intrinsic value of the option, and what is the time value?

LG3 **P14.5** A six-month call on a certain share carries a strike price of $60. It can be purchased at a cost of $6000. Assume that the underlying share rises to $75 by the expiration date of the option. How much profit would this option generate over the six-month holding period? Using HPR, what is its rate of return?

LG6 **P14.6** Dorothy McBride does a lot of investing in the sharemarket and is a frequent user of market-index options. She is convinced that the market is about to undergo a broad retreat and has decided to buy a put on the ASX 200. The put carries a strike price of 3150 points and is quoted in the financial press at 52. Although the ASX 200 is currently at 3130, Dorothy thinks it will drop to 3075 by the expiration date on the option. How much profit will she make, and what will be her holding period return if she is right? How much will she lose if the ASX 200 goes up (rather than down) by 55 points and reaches 3185 by the date of expiration?

LG3 LG4 **P14.7** Bill Polaski holds 6000 shares in SNS Transport. He bought the shares several years ago at $4.85, and the shares are now trading at $7.50. Bill is concerned that the market is beginning to soften; he doesn't want to sell the shares, but he would like to be able to protect the profit he has made. He decides to hedge his position by buying six puts on SNS; the three-month puts carry a strike price of $7.50 and are currently trading at $0.25.

a. How much profit or loss will Bill make on this deal if the price of SNS does indeed drop—to $6 a share—by the expiration date on the puts?

b. How would he do if the share kept going up in price and reached $9 a share by the expiration date?

c. What do you see as the main advantages of using puts as hedge vehicles?

d. Would Bill have been better off using in-the-money puts—that is, puts with an $8.50 strike price that are trading at $1.05? How about using out-of-the-money puts—say, those with a $7 strike price, trading at $0.10? Explain.

LG4 LG6 **P14.8** C.F. Wong holds a well-diversified portfolio of high-quality, large-cap shares. The current value of Wong's portfolio is $475 000, but he is concerned that the market is heading for a big fall (perhaps as much as 10%) over the next three to six months. He doesn't want to sell all his shares because he feels they all have good long-term potential and should perform nicely once share prices have bottomed out. As a result, he decides to look into the possibility of using index options to hedge his portfolio. Assume that the ASX 200 currently stands at 2910 points and among the many put options available on this index are two that have caught his eye: (1) a six-month put with a strike price of 2890 that is trading at 26, and (2) a six-month put with a 2830 strike price that is quoted at 12.

a. How many ASX 200 puts would Wong have to buy to protect his $475 000 share portfolio? How much would it cost him to buy the necessary number of 2890 puts? How much would it cost to buy the 2830 puts?

b. Now, considering the performance of both the put options and the Wong portfolio, determine how much net profit (or loss) Wong will earn from each of these put hedges if both the market (as measured by the ASX 200) and the Wong portfolio fall by 10% over the next six months? What if the market and the Wong portfolio fall by only 5%? What if they go up by 10%?

c. Do you think Wong should set up the put hedge and, if so, using which put option? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG3 LG5 **P14.9** Angelo Martino just purchased 5000 shares of Norman Harvey Ltd at $6.15, and he has decided to write covered calls against these shares. Accordingly, he sells five Norman Harvey calls at their current market price of $0.575; the calls have three months to expiration and carry a strike price of $6.50. The shares pay a quarterly dividend of 8 cents a share.

a. Determine the total profit and holding period return Angelo will generate if the share rises to $6.50 a share by the expiration date on the calls.

b. What happens to Angelo's profit (and return) if the price of the share rises to more than $6.50 a share?

c. Does this covered call position offer any protection (or cushion) against a drop in the price of the share? Explain.

LG6 **P14.10** Rick owns shares in a retailer that he believes is highly undervalued. Rick expects that the share will increase in value nicely over the long term. He is concerned, however, that the entire retail industry may fall out of favour with investors as some larger companies report falling sales. There are no options traded on his shares, but Rick would like to hedge against his fears about retail. Can Rick hedge against the risk he is concerned with by using options?

LG3 **P14.11** A share trades for $27 per share. A call option on that share has a strike price of $25 and an expiration date nine months in the future. The volatility of the share's returns is 45%, and the risk-free rate is 3%. What is the Black and Scholes value of this option?

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 14.1 THE ESCOBARS' INVESTMENT OPTIONS

LG3 LG4 Phil Escobar is a successful businessman in Alice Springs. The box-manufacturing firm he and his wife, Judy, founded several years ago has prospered. Because he is self-employed, Phil is building his own retirement fund. So far, he has accumulated a substantial sum in his investment account, mostly by following an aggressive investment posture; he does this because, as he puts it, 'In this business, you never know when the bottom's gonna fall out'. Phil has been following the shares of Rembrandt Paper Products (RPP), and after conducting extensive analysis, he feels the share is about ready to move. Specifically, he believes that within the next six months, RPP could go to about $8 per share, from its current level of $5.75. The share pays annual dividends of $0.24 per share, and Phil figures he would receive two quarterly dividend payments over his six-month investment horizon.

In studying the company, he notes that it has six-month call options (with $5 and $6 strike prices) listed on the ASX. The calls are quoted at $0.80 for the options with $5 strike prices and at $0.50 for the $6 options.

QUESTIONS

1. How many alternative investment vehicles does Phil have if he wants to invest in RPP for no more than six months? What if he has a two-year investment horizon?
2. Using a six-month holding period and assuming the share does indeed rise to $8 over this time frame:
   a. Find the value of both calls, given that at the end of the holding period neither contains any investment premium.
   b. Determine the holding period return for each of the four investment alternatives open to Phil Escobar.
3. Which course of action would you recommend if Phil simply wants to maximise profit? Would your answer change if other factors (for example, comparative risk exposure) were considered along with return? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 14.2 FRED'S QUANDARY: TO HEDGE OR NOT TO HEDGE

LG3 LG4 A little more than 10 months ago, Fred Weaver, a banker, bought 3000 shares at $4 per share. Since then, the price of the shares has risen to $7.50 per share. It is now near the end of the year, and the market is starting to weaken. Fred feels there is still plenty of play left in the shares but is afraid that the tone of the market will be detrimental to his position. His wife, Denise, is taking a course on the sharemarket and has just learned about put and call hedges. She suggests that he use puts to hedge his position. Fred is intrigued by the idea, which he discusses with his stockbroker—who advises him that the needed puts are indeed available on his share. Specifically, he can buy three-month puts, with $7.50 strike prices, at a cost of $550 each (quoted at $0.55).

QUESTIONS

1. Given the circumstances surrounding Fred's current investment position, what benefits could be derived from using the puts as a hedge device? What would be the major drawback?
2. What will Fred's minimum profit be if he buys three puts at the indicated option price? How much would he make if he didn't hedge but instead sold his shares immediately at a price of $7.50 per share?
3. Assuming Fred uses three puts to hedge his position, indicate the amount of profit he will generate if the share moves to $10 by the expiration date of the puts. What if it drops to $5 per share?
4. Should Fred use the puts as a hedge? Explain. Under what conditions would you urge him *not* to use the puts as a hedge?

Excel with Spreadsheets

One of the positive attributes of investing in options is the profit potential from the puts or calls. The quoted market price of the option is influenced by the time to expiration, share volatility, market interest rates and the behaviour of the price of the underlying shares. The latter variable tends to drive the price movement in options and impacts on its potential for profitable returns.

Create a spreadsheet model, similar to that presented below, in order to calculate the profits and/or losses from investing in the option described.

	A	B	C	D	E	F	G	H	I	J
1										
2						Long		100		3-Month Call Option
3						Position		Underlying		on the share
4						No		shares		Strike Price
5						Option				$$$
6										
7	Today									
8										
9	Market value of share			$$		$$		$$		
10	Call strike price			$$						
11	Call option premium			$$						
12										
13										
14	Scenario One: 3 months later									
15	Expected market value of share			$$		$$		$$		
16	Share value @ strike price			$$						$$
17	Call premium			$$						$$
18	Breakeven point			$$						$$
19										
20	Profit (Loss)					$$		$$		

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

John has been following the sharemarket very closely over the past 18 months and has a strong belief that future share prices will be significantly higher. He has two alternatives that he can follow. The first is to use a long-term strategy—purchase the share today and sell it sometime in the future at a possibly higher price. The other alternative is to buy a three-month call option. The relevant information needed to analyse the two alternatives is presented below:

Current share price = $49

Desires to buy one round lot = 100 shares

Three-month call option has a strike price of $51 and a call premium of $2

Questions

1. In scenario 1, if the share price three months from now is $58:
   a. What is the long-position profit or loss?
   b. What is the break-even point of the call option?
   c. Is the option in- or out-of-the-money?
   d. What is the option profit or loss?
2. In scenario 2, if the share price three months from now is $42:
   a. What is the long-position profit or loss?
   b. What is the breakeven point of the call option?
   c. Is the option in- or out-of-the-money?
   d. What is the option profit or loss?

The use of put and call options is increasing. These investment instruments are increasingly being used for both speculation and hedging. Individual investors and businesses have an interest in these instruments. The growth in the use of options is paralleled by the growth in related websites. A thrust of many of these sites is to educate the investor on the risks and rewards of investing in options as well as current features on options trading.

WEBSITE	URL
Australian Financial Markets Association	www.afma.com.au
Australian Financial Review	www.afr.com.au
Australian Securities Exchange	www.asx.com.au
Australian Securities and Investment Commission	www.asic.gov.au
Chicaco Board Options Exchange	www.cboe.com
Reserve Bank of Australia	www.rba.gov.au
Smart Investor	www.afrsmartinvestor.com.au

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CHAPTER

15

Commodities and Financial Futures

LEARNING GOALS

After studying this chapter, you should be able to:

- **LG1** Describe the essential features of a futures contract and explain how the futures market operates.
- **LG2** Explain the role that hedgers and speculators play in the futures market, including how profits are made and lost.
- **LG3** Describe the commodities segment of the futures market and the basic characteristics of these investment vehicles.
- **LG4** Discuss the various trading strategies investors can use with commodities and explain how investment returns are measured.
- **LG5** Explain the difference between a physical commodity and a financial future, and discuss the growing role of financial futures in the market today.
- **LG6** Discuss the trading techniques that can be used with financial futures and note how these securities can be used in conjunction with other investment vehicles.

Don't be Backward about Futures!

Many investors want instruments that they can use to control for risks that may affect their investments, while a number of others look for investment opportunities beyond the traditional share, bond and property markets. The futures market provides one avenue to meet these needs.

Every business day, an average of some 286 000 futures contracts are traded on the Australian Securities Exchange (ASX). That's over 73 million contracts in 2009/10 in Australia alone, and we are nowhere near being the largest international market! Contracts are traded on commodities futures (including wool and wheat) and on financial futures (including Treasury bonds and bank-accepted bills). More exotic futures options contracts are also available.

There can be significant apprehension about trading in futures—most individual investors lose their money when first trading in the futures markets. Still, the use of futures contracts for commodities and financial instruments can be a very important tool for controlling risk. Before investing in individual commodities or trading financial futures, you should understand how these specialised and often high-risk instruments function. You will see in this chapter how these investment vehicles work and how individual investors can use them.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The Futures Market

LG 1 LG 2

Psst, wanna buy some copper? How about some wheat, or wool or electricity? Maybe a share price index strikes your fancy. Sound a bit unusual? Perhaps, but these items have one thing in common: they all represent investment vehicles. This is the more exotic side of investing—the market for commodities and financial futures—and it often involves a considerable amount of speculation. In fact, the risks are enormous, but with a little luck, the payoffs can be phenomenal, too. Even more important than luck, however, is the need for patience and know-how. Indeed, *these are specialised investment products that require specialised investor skills*.

The amount of futures trading in the United States, Australia and other countries has mushroomed over the past two or three decades. An increasing number of investors have turned to futures trading as a way to earn attractive, highly competitive rates of return. But it is *not* the traditional commodities contracts that have drawn many of these investors; rather, it is the new investment vehicles that are being offered. That is, a major reason behind the growth in the volume of futures trading has been *the big jump in the number and variety of contracts available for trading*. Today, in addition to the traditional primary commodities, such as grains and metals, international markets also exist for live animals, processed commodities, crude oil, foreign currencies, money market securities, Treasury notes and bonds, Eurodollar securities, and certain ordinary shares and sharemarket indices. You can even buy listed put and call *options* on just about any actively traded futures contract. All of these commodities and financial assets are traded in what is known as the *futures market*.

Market Structure

cash market
a market where a product or commodity changes hands in exchange for a cash price paid when the transaction is completed.

futures market
the organised market for the trading of futures contracts.

When a commodity such as wheat is sold, the transaction takes place in the **cash market**; in other words, the wheat changes hands in exchange for a cash price paid to the seller. The transaction occurs at that point in time, and for all practical purposes is completed then and there. Most traditional securities are traded in this type of market. However, the wheat could also be sold in the **futures market**, the organised market for the trading of futures contracts. In this market, the seller would not actually deliver the wheat until some mutually agreed-upon date in the future. As a result, the transaction would not be completed for some time: the seller would receive partial payment for the wheat at the time the agreement was entered into and the balance on delivery. The buyer, in turn, would own a highly liquid futures contract that could be held (and presented for delivery of the wheat) or traded in the futures market. No matter what the buyer does with the contract, as long as it is outstanding, the seller has *a legally binding obligation to make delivery* of the stated quantity of wheat on a specified date in the future, and the buyer/holder has a similar *obligation to take delivery* of the underlying commodity.

futures contract
a commitment to deliver a certain amount of some specified item at some specified date in the future.

delivery month
the time when a commodity must be delivered; defines the life of a futures contract.

Futures Contracts A **futures contract** is a commitment to deliver a certain amount of a specified item at a specified date at a price agreed upon at the time the contract is sold. Each market establishes its own standard contract specifications, which include not only the quantity and quality of the item but also the delivery procedure and delivery month. The **delivery month** for a futures contract is much like the expiration date used on put and call options; it specifies when the commodity or item must be delivered and thus defines the life of the contract.

Table 15.1 lists a cross-section of different commodities and financial futures that are traded in the United States and Australia. The US exchanges offer a very wide range

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 15.1 Futures Contract Dimensions for a Sample of Contracts

Contract	Size of a Contract*
United States	
Corn	5000 bushels
Wheat	5000 bushels
Live cattle	40 000 pounds
Pork bellies	40 000 pounds
Coffee	37 500 pounds
Cotton	50 000 pounds
Gold	100 troy ounces
Copper	25 000 pounds
Japanese yen	12.5 million yen
Treasury bills	US$1 000 000
Treasury bonds	US$100 000
S&P 500 Stock Index	$250 times the index
Australia (SFE)	
Wheat	50 metric tonnes
Wool	2500 kilograms
Electricity	500 megawatt hours
Treasury bonds	A$100 000 face value
Bank-accepted bills	A$1 000 000 face value
Ordinary shares of selected companies	1000 shares
Share Price Indices	$25 times the index

* In the United States, futures contracts are traded on a number of exchanges. The size of some US contracts may vary by exchange.

INVESTOR FACTS

DRIVING THE DESK—Across the US farm belt, rural women are organising commodity clubs to plot hedging strategies on futures exchanges. As the United States Government phases out crop subsidies, growers are looking for ways to get more income from their crops. One way to do that is to stop selling crops at harvest prices, usually the year's lowest, and instead use the futures market to lock in higher prices. The number of farmers using futures is growing quickly. Because many farm wives handle the family's bookkeeping, they are the ones attending futures trading seminars, subscribing to trading-advisory services and accessing market information on the Internet. Besides, adds one farm wife, 'Getting a farmer to do paperwork is like nailing butter to a wall … So I drive the desk'. The situation is probably no different in Australian farm households!

of contracts, much wider than in Australia. As you can see, the typical futures contract covers a large quantity of the underlying product or financial instrument. However, although the value of a single contract is normally quite large, the actual amount of investor capital required to deal in these vehicles is relatively small, because *all trading in this market is done on a margin basis*.

Options versus Futures Contracts In many respects, futures contracts are closely related to the call options we studied in Chapter 14. Both involve the future delivery of an item at an agreed price. But there is *a significant difference* between a futures contract and an options contract: a futures contract *obligates* a person to buy or sell a specified amount of a given commodity on or before a stated date, unless the contract is cancelled or liquidated before it expires. In contrast, an option gives the holder the *right* to buy or sell a specific amount of a real or financial asset at a specific price over a specified period of time. In addition, whereas *price* (that is, strike price) is one of the specified variables on a call option, it is *not* stated anywhere on a futures contract. Instead, the price on a futures contract is established through trading on the floor of a commodities exchange, which means that the delivery price is set by supply and demand at whatever price the contract sells for. Equally important, the risk of loss with an option is limited to the price paid for it, whereas a futures contract has *no such limit on exposure to loss*.

Major Exchanges Futures contracts in the United States got their start in the agricultural segment of the economy over 150 years ago, when

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

individuals who produced, owned and/or processed foodstuffs sought a way to protect themselves against adverse price movements. Later, futures contracts came to be traded by individuals who were not necessarily connected with agriculture but who wanted to make money with commodities by speculating on their price swings. The first organised commodities exchange in the United States was the Chicago Board of Trade, which opened its doors in 1848. Over time, additional markets opened, and there are now more than a dozen commodities exchanges in operation in the United States. The majority of trading, however, takes place on the Chicago Mercantile Exchange (CME), with most of the remaining trades conducted in the CME Group's other merger partners: the Chicago Board of Trade (CBOT) and the New York Mercantile Exchange (NYMEX).

Organised futures trading in Australia originally began with the establishment of the Sydney Greasy Wool Futures Exchange in May 1960, later known as the Sydney Futures Exchange (SFE), to provide a hedging facility for the wool industry. The SFE merged with the Australian Stock Exchange in July 2006 and is now a member of the ASX Group (see Chapter 2). Trading takes place on three classes of wool; on electricity, cattle, wheat and three other grains; and on selected market indices, three- and 10-year government bonds, 90-day bank bills and the 30-day interbank cash rate.

Most international exchanges deal in a number of different commodities or financial assets, and many commodities and financial futures are traded on more than one exchange. Although the exchanges are highly automated, futures trading on the US and some other international exchanges is still conducted by **open outcry auction**. As shown in Figure 15.1, actual trading on the floors of these exchanges is conducted through a series of shouts, body motions and hand signals. The SFE switched from open outcry to a fully automated system in November 1999, with all trading taking place electronically. The CBOT now allows both open outcry floor trading and electronic trading to occur simultaneously.

open outcry auction
in futures trading, an auction in which trading is done through a series of shouts, body motions and hand signals.

Trading in the Futures Market

The futures market contains two types of traders: hedgers and speculators. The market simply could not exist and operate efficiently without either one. The **hedgers** are commodities producers and processors (which today include financial institutions and corporate investment managers) who use futures contracts as a way to protect their interest in the underlying commodity or financial instrument. For example, if a farmer thinks the price of wheat will drop in the near future, he or she will hedge their position by selling a futures contract on wheat in the hope of locking in as high a price as possible for the crop. In effect, the hedgers provide the underlying strength of the futures market and represent the very reason for its existence. *Speculators*, in contrast, give the market liquidity; they are the ones who trade futures contracts simply to earn a profit on expected swings in the price of a futures contract. They are the risk takers, the investors who have no inherent interest in any aspect of the commodity or financial future other than the price action and potential capital gains it can produce.

hedgers
producers and processors who use futures contracts to protect their interest in an underlying commodity or financial instrument.

Trading Mechanics Once futures contracts are created, they can readily be traded in the market. Like ordinary shares and other traditional investment vehicles, futures contracts are bought and sold through brokerage offices. Most companies have at least one or two people in each office who specialise in futures contracts. In addition, a number of specialised commodity companies stand ready to help individuals with their investment needs. Except for setting up a special commodities trading account, there is really no difference between trading futures and dealing in shares or bonds.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 15.1 **The Auction Market at Work on the Floor of the Chicago Board of Trade***

Traders employ a system of open outcry and hand signals to indicate whether they wish to buy or sell and the price at which they wish to do so. Fingers held vertically indicate the number of contracts a trader wants to buy or sell. Fingers held horizontally indicate the fraction of a cent above or below the last traded full-cent price at which the trader will buy or sell.

* This system is no longer used in Australia.

(*Source:* Chicago Board of Trade. Reprinted by permission of Trade of the City of Chicago, Inc. (CBOT). The CBOT makes no representation or warranty, express, or implied, regarding the promotional material being advertised herein.)

The same types of orders are used, and the use of margin is the standard way of trading futures. Any investor can buy or sell any contract, with any delivery month, at any time, so long as it is currently being traded on one of the exchanges.

Buying a contract is referred to as taking a *long position*, whereas selling one is termed taking *a short position*. It is exactly like going long or short with shares and has the same connotation: the investor who is long wants the price to rise, and the short seller wants it to drop. Both long and short positions can be liquidated simply by executing an offsetting transaction. The short seller, for example, would cover his or her position by buying an equal amount of the contract. In general, less than 2% of all futures contracts are settled by delivery; the rest are offset prior to the delivery month. All trades are subject to normal transaction costs, which include **round-trip commissions** of about $20 for each contract traded. (A round-trip commission includes the commission costs on both ends of the transaction—to buy and to sell a contract.)

round-trip commissions
the commission costs on both ends (buying and selling) of a securities transaction.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The exact size of the commission depends on the number and type of contracts being traded.

Margin Trading Buying on margin means putting up only a fraction of the total price in cash; margin, in effect, is the *amount of equity* that goes into the deal. Margin trading plays a crucial role in futures transactions because *all futures contracts are traded on a margin basis*. The margin required usually represents about 5% of the value of the contract, which is very low when compared to the margin required for shares and most other types of securities. Furthermore, there is *no borrowing* required on the part of the investor to finance the balance of the contract; the margin, or **initial margin deposit**, as it is called with futures, exists simply as a way to guarantee fulfilment of the contract. The initial margin deposit isn't a partial payment for the commodity or financial instrument, nor is it in any way related to the value of the product or item underlying the contract. Rather, it represents security to cover any loss in the market value of the contract that may result from adverse price movements.

initial margin deposit
an amount deposited with the exchange clearing house to cover any loss in the market value of a futures contract that may result from adverse price movements.

The size of the required initial margin deposit is specified as a dollar amount. It varies according to the type of contract (that is, the amount of price volatility in the underlying commodity or financial asset). Table 15.2 gives the initial margin requirements for a number of commodities and financial futures traded on the ASX. The initial margin deposit noted in Table 15.2 is the amount of investor capital that must be deposited when the transaction is initiated and represents the amount of money required to make a given investment. Margin accounts are maintained by ASX Clear (Futures) Pty Limited, which also guarantees the financial performance of all contracts traded. ASX Clear (Futures) Pty Limited acts as a central counterparty to all contracts, effectively becoming the seller for every buyer and the buyer for every seller. This provides confidence that all contracts will be filled, thus minimising the risk of default.

After the investment is made, the market value of a contract will, of course, rise and fall as the quoted price of the underlying commodity or financial instrument goes up or down. Such market behaviour will cause the amount of margin on deposit to change. To be sure that an adequate margin is always on hand, investors are required to meet a second type of margin requirement, the **minimum margin**. This deposit is slightly less than the initial deposit and establishes the minimum amount of margin that must be kept in the account at all times. But if the market moves against the investor and the value of the contract drops by more than the allowed amount, the investor will receive a *margin call*. He or she must then immediately deposit enough cash to bring the position back to the initial margin level.

minimum margin
the minimum amount of margin that must be kept in a margin account at all times.

mark-to-market
a daily check of an investor's margin position, determined at the end of each trading day, at which time the margin account is debited or credited as needed.

An investor's margin position is checked daily via a procedure known as **mark-to-market**. That is, the gain or loss in a contract's value is determined at the end of each

TABLE 15.2 Margin Requirements for a Sample of Commodities and Financial Futures

	Initial Margin Deposit
Wool—fine	$960
Wool deliverable (greasy)	825
Three-year Treasury bonds (6% coupon)	955
Ten-year Treasury bonds (6% coupon)	2290
Ninety-day bank-accepted bills	730
ASX 200 Index	7000

Note: These margin requirements were issued by the ASX on 13 October 2010. Depending on the volatility of the market, exchange-minimum margin requirements are changed frequently, and thus the requirements in this table are also subject to change at short notice.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

trading day, at which time the ASX Clear (Futures) Pty Limited debits or credits the investor's account accordingly. In a falling market, an investor may receive a number of margin calls and be required to make additional margin payments in order to keep the position above the minimum margin level. Intraday calls, where only a few hours' notice is given, may occur during periods of extreme volatility. Failure to meet a margin call will mean that the ASX Clear (Futures) Pty Limited has no choice but to close out the position—that is, to sell the contract.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

15.1 What is a *futures contract*? Briefly explain how it is used as an investment vehicle.

15.2 Discuss the difference between a *cash market* and a *futures market*.

15.3 What is the main source of return to commodities speculators? How important to these investors is current income from dividends and interest?

15.4 Why are both hedgers and speculators important to the efficient operation of a futures market?

15.5 Explain how margin trading is conducted in the futures market.

a. What is the difference between an *initial margin deposit* and a *minimum margin*?
b. Are investors ever required to put up an additional margin? If so, when?

Commodities

LG3 LG4

Physical commodities like grains, metals, timber and meat make up a major portion of the futures market in the United States, but less so in Australia. Commodities futures contracts comprise less than 0.3% of all futures contracts traded on the ASX. While the ASX offers a relatively narrow range of commodities contracts, Australian commodities investors can also trade on larger overseas markets, such as the United States, which offer a much wider choice. The material that follows focuses on *commodities trading* and begins with a review of the basic characteristics and investment merits of these vehicles.

Basic Characteristics

Various types of physical commodities are found on nearly all futures exchanges. As previously mentioned, the ASX trades in futures contracts for three classes of wool—the most actively traded and reported Australian commodity—as well as for wheat and on electricity. Canola, barley and sorghum are also traded, but in very low volumes. The US market for commodity contracts is divided into four main segments: grains and oilseeds, livestock and meat, food and fibre, and metals and petroleum. Such segmentation doesn't affect trading mechanics and procedures, but it provides a convenient way of categorising commodities into groups based on similar underlying characteristics. Table 15.3 shows the diversity of the US commodities market and the variety of contracts available. Although the list of the more actively traded commodities changes yearly, we can see from the table that investors had dozens of different commodities to choose from, and a number of these (e.g. soybeans, wheat and sugar) are available in several different forms or grades. Many more commodities (such as butter, cheese and boneless beef) are not so widely traded but still make up a part of this market.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 15.3 Major Classes of Commodities Traded on US Futures Exchanges

Grains and Oilseeds	Metals and Petroleum
Corn	Electricity
Oats	Copper
Soybeans	Gold
Soybean meal	Platinum
Soybean oil	Silver
Wheat	Palladium
Barley	Gasoline
Canola	Heating oil
Flaxseed	Crude oil
Rice	Gas oil
	Propane
	Natural gas
Livestock and Meat	**Food and Fibre**
Cattle—live	Cocoa
Cattle—feeder	Coffee
Hogs	Cotton
Pork bellies	Orange juice
	Sugar

A Commodities Contract Every commodity has its own specifications regarding the amounts and quality of the product being traded. Figure 15.2, on page 505, is an excerpt from the 'Market Wrap' section of the *Australian Financial Review* and shows the contract and quotation system used with commodities. Using the greasy wool contract shown in Figure 15.2 as an illustration, we can see the trading volume and key prices for each of the delivery months traded.

The quotation system used for commodities is based on the size of the contract and the pricing unit. The financial media generally report the previous price (closing price on the last trading day), the price of the first trade for the day, and the high, low and closing prices for each delivery month. With commodities, the last price of the day, or the closing price, is known as the **settlement price**. Also reported, at least by the *Australian Financial Review*, is the amount of **open interest** (O/P) in each contract—that is, the number of contracts currently outstanding. Note in Figure 15.2 that the settlement price for April greasy wool was 1026 cents. The pricing system is cents per kilogram, so this means that the contract was being traded at $10.26 per kilogram and that the market value of the contract was $25 650. (Each contract involves 2500 kilograms and each kilogram is worth $10.26; thus, 2500 × $10.26 = $25 650.)

settlement price
the closing price (last price of the day) for commodities and financial futures.

open interest
the number of contracts currently outstanding on a commodity or financial future.

Price Behaviour Commodity prices react to a unique set of economic, political and international pressures—as well as to the weather. Although the explanation of *why* commodity prices change is beyond the scope of this book, it should be clear that they do move up and down just like any other investment vehicle, which is precisely what speculators want. However, because we are dealing in such large trading units (2500 kilograms of this or 50 tonnes of that), even a modest price change can have an enormous impact on the market value of a contract and therefore on investor returns or losses. For example, if the price of greasy wool goes up or down by just 40 cents per kilogram, the value of a *single contract* will change by $1000. A greasy wool contract can be bought with an $825 initial margin deposit, so it is easy to see the effect this kind of price behaviour can have on investor return.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 15.2 **Quotations on Actively Traded Commodity Futures Contracts**

These quotes reveal at a glance key information about the various commodities, including the latest high, low and closing ('settlement') prices for each contract.

COMMODITY FUTURES

		Prev Price	First Trade	High	Low	SETTLEMENT Price	Change	$ Value of Chg	Volume	Prev O/P
Fine Wool (cents per kilogram cleanweight)										
Aug	11	1215	1250	1250	1250	1245	+30	750.00	4	7
NIGHT Vol 0		DAY Vol 4		Previous O/P 16						
Greasy Wool (cents per kilogram cleanweight)										
Apr	11	1023	1030	1035	1010	1026	+3	75.00	14	84
Jun	11	1010	1018	1025	1018	1025	+15	375.00	3	86
Aug	11	1008	1020	1020	1020	1015	+7	175.00	5	72
Oct	11	1007	995	995	995	1014	+7	175.00	1	31
NIGHT Vol 0		DAY Vol 23		Previous O/P 1039						

(*Source: Australian Financial Review,* 12 November 2010, p. 35. Courtesy of the *Australian Financial Review.*)

But do commodity prices really move all that much? Judge for yourself: the '$ Value of Change' column in Figure 15.2 shows some excellent examples of sizeable price changes that occur from one day to the next. Note, for example, that August 2011 greasy wool rose $175, June 2011 greasy wool rose $375, and the August 2011 fine wool contract went up a whopping $750. Now, keep in mind that these are *daily* price swings that occurred on *single* contracts. These are sizeable changes, even by themselves; but when you look at them relative to the (very small) original investment required (sometimes as low as $825), they quickly add up to serious returns (or losses)! And they occur not because of the volatility of the underlying prices but because of the sheer magnitude of the commodities contracts themselves.

Return on Invested Capital Futures contracts have only one source of return: the capital gains that can be earned when prices move in a favourable direction. There is no current income of any kind. The volatile price behaviour of futures contracts is one reason why high returns are possible; the other is leverage. That is, because all futures trading is done on margin, it takes only a small amount of money to control a large investment position and to participate in the price swings that accompany many futures contracts. Of course, the use of leverage also means that it is possible for an investment to be wiped out with just one or two bad days.

return on invested capital
a return to investors based on the amount of money actually invested in a security, rather than the value of the contract itself.

Investment return can be measured by calculating **return on invested capital**. This is simply a variation of the standard holding period return formula, where return is based on the *amount of money actually invested in the contract*, rather than on the value of the contract itself. It is used because of the generous amount of leverage (margin) used in commodities trading. The return on invested capital for a commodities position can be determined according to the following simple formula:

Equation 15.1

$$\text{Return on invested capital} = \frac{\text{Selling price of commodity contract} - \text{Purchase price of commodity contract}}{\text{Amount of margin deposit}}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Equation 15.1 can be used for both long and short transactions. To see how it works, assume you just bought two August fine wool contracts at 1245 cents per kilogram by depositing the required initial margin of $1920 ($960 for each contract). Your investment amounts to only $1920, but you control 5000 kilograms of wool worth $62 250 at the time they were purchased. Now, assume that after a week, August fine wool closes at 1280 cents per kilogram ($64 000), so you decide to sell out and take your profit. Your return on invested capital is:

$$\text{Return on invested capital} = \frac{\$64\,000 - \$62\,250}{\$1920}$$

$$= \frac{\$1750}{\$1920} = \underline{\underline{91\%}}$$

Clearly, this high rate of return was due not only to an increase in the price of the commodity, which increased by only 2.8%, but also—and more crucially—to the fact that you were using very low margin. (The initial margin in this particular transaction equalled just 3.1% of the underlying value of the contract.)

Of course, instead of rising, the price of fine wool could have dropped by 35 cents per kilogram. In this case, the investor would have lost almost all of his or her original investment ($1920 – $1750), leaving only $170, out of which would have to come a round-trip commission of $20. But the drop in price would be just what a *short seller* is after. Here's why: you sell 'short' the August fine wool contract at 1245 and buy it back sometime later at 1210. Clearly, the difference between the selling price and the purchase price is the same cents, but in this case it is *profit*, because the selling price exceeds the purchase price. (See Chapter 2 for a review of short selling.)

Trading Commodities

Investing in commodities takes one of three forms. The first, *speculating*, involves using commodities as a way to generate capital gains as just illustrated, while taking on the risks of adverse price movements. In essence, speculators try to capitalise on the wide price swings that are characteristic of so many commodities. Figure 15.3 provides the RBA Index of Commodity Prices since 1986 and demonstrates the rapid rise of commodity prices over the last 10 years and the increased volatility since 2006. Interestingly, for Australian investors price volatility is impacted by both underlying supply and demand factors for each commodity and movements of the Australian dollar. Looking over the last year of the graph, a 46% rise in the special drawing rights (SDR) value of the index was dampened down to 33% in Australian dollar terms given the strong rise of the Australian dollar against the US dollar over the same time period.

Although such price movements appeal to speculators, they frighten many other investors. As a result, some of these more cautious investors turn to *spreading*, the second form of commodities investing. Futures investors use this trading technique much like the spreading that is done with put and call options, as a way to capture some of the benefits of volatile commodities prices but without all the exposure to loss. One very important reason for spreading in the commodities market is that, unlike options, *there is no limit to the amount of loss that can occur with a futures contract*. You set up a spread by buying one contract and simultaneously selling another related contract. Although one side of the transaction will lead to a loss, you hope that the profit earned from the other side will more than offset the loss, and that the net result will be at least a modest amount of profit. And if you are wrong, the spread will serve

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 15.3

The Behaviour of Commodity Prices over Time

This RBA graph shows the volatile nature of commodity prices and underscores the investor's need for know-how when dealing in commodities.

(*Source:* Reserve Bank of Australia, <www.rba.gov.au/statistics/images/commodity-prices.gif>, accessed 14 November 2010. © Reserve Bank of Australia, 2001–2010. All rights reserved.)

INVESTOR FACTS

WHAT ARE 'SHRIMP FUTURES'?—We are talking about one of the futures contracts listed on the Minneapolis Grain Exchange, and it has nothing to do with grain and even less to do with Minneapolis. This commodities exchange is the only one in the world where shrimp (better known as 'prawns' in Australia) futures contracts are traded. The exchange began trading white shrimp futures in July 1993 and in late 1994 added futures contracts on black tiger shrimp. Perhaps the ASX should consider introducing barramundi futures contracts?

to limit (but not eliminate) any losses. Here is a simple example of how a spread might work. Suppose you buy contract A at 533 and at the same time short sell contract B for 575. Sometime later, you close out your interest in contract A by selling it at 542 and simultaneously cover your short position in B by purchasing a contract at 579. Although you made a profit of 9 points on the long position, contract A (542 – 533), you lost 4 points on the contract you shorted, B (575 – 579). The net effect, however, is a profit of 5 points, which, if you were dealing in cents per kilogram, would mean a profit of $125 on a 2500 kilogram contract. All sorts of commodity spreads can be set up for almost any type of investment situation. Most of them, however, are highly sophisticated and require specialised skills.

Finally, commodities futures can be used as *hedging* vehicles. A hedge in the commodities market is more of a technical strategy and is used almost exclusively by producers and processors to protect a position in a product or commodity. For example, a producer or grower would use a commodity hedge to obtain as *high a price* as possible for the goods he or she sells. The processor or manufacturer who uses the commodity, however, would use a hedge for the opposite reason: to obtain the goods at as *low a price* as possible. A successful hedge, in effect, means added income to producers and lower costs to processors.

Commodities and the Individual Investor

Commodities appeal to investors because of the high rates of return they offer and their ability to act as inflation hedges during periods of rapidly rising consumer prices. More often than not, in periods of high inflation investors lose more in purchasing power than they gain from after-tax returns. Under such conditions, investors can be expected to seek outlets that provide better protection against inflation, which explains why the interest in commodities tends to pick up with inflation.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Commodities can play an important role in your portfolio *so long as you understand the risks involved and are well versed in the principles and mechanics of commodities trading*. Making money in the commodities market is extremely difficult. It may look easy—perhaps too easy—but very few investors (even the most experienced) are able to earn big returns consistently by trading futures. Indeed, for most people, the quickest way to lose money in commodities is to jump in without knowing what they are doing. Because there is the potential for a lot of price volatility and because commodity trading is done on a very low margin, the potential for loss is enormous.

Accordingly, most experts recommend that only a portion of your investment capital be committed to commodities. The specific amount would, of course, be a function of your aversion to risk and the amount of resources you have available. You have to be prepared mentally and should be in a position financially to absorb losses—perhaps a number of them. And not only should an adequate cash reserve be kept on hand (to absorb losses or to meet margin calls), but it is also a good idea to maintain a diversified holding of commodities in order to spread your risks.

If you decide to try your hand at commodities, keep in mind that there are several different ways of investing. You can invest directly in the commodities market by trading futures contracts on your own, or, to reduce your risk exposure a bit, you might want to trade put and call options on some of the more actively traded futures contracts. Alternatively, you can invest in limited partnership *commodity pools*. These pools, which are a lot like managed funds, might be used by individuals who wish to invest in the commodities market but lack the time or expertise to manage their own investments. Still another alternative is to consider investing in *commodities-oriented futures funds*. These are essentially managed funds that pool investors' money and actively trade futures contracts. Most of these funds invest only about 20–25% of their money in margined futures contracts and then keep the rest in interest earning assets such as Treasury bonds. These funds may offer investors a way to gain some exposure to the commodities market, but they do have a downside: not only can their performance be highly volatile, but their costs can also be quite high. All of which should come as no surprise, because in this market, there is no easy way to make money!

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

15.6 List and briefly define the four essential parts of a commodity contract. Which parts have a direct bearing on the price behaviour of the contract?

15.7 Briefly define each of the following:

a. *Settlement price*
b. *Open interest*
c. *Delivery month*

15.8 What is the one source of return on futures contracts? What measure is used to calculate the return on a commodity contract?

15.9 Note several approaches to investing in commodities and explain the investment objectives of each.

15.10 Explain why you should be well versed in the behaviour and investment characteristics of commodities futures when investing in this market. Why should futures holdings be well diversified?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Financial Futures

LG5 LG6

financial futures
a type of futures contract in which the underlying 'commodity' is a financial asset, such as debt securities, ordinary shares or market indices.

Another dimension of the futures market is **financial futures**, a segment of the market in which futures contracts are traded on a variety of financial instruments. Actually, financial futures are little more than an extension of the commodities concept. They were created for much the same reason as commodity futures, they are traded in the same market, their prices behave a lot like commodities, and they have similar investment merits. Yet despite all these similarities, financial futures are a unique type of investment vehicle. Let's now look more closely at these instruments and how investors can use them.

The Financial Futures Market

Though relatively young, the financial futures market is the dominant force in the whole futures market. Indeed, the level of trading today in the financial futures market far surpasses that of the traditional commodities market. Much of the interest in financial futures is due to hedgers and big institutional investors who use these contracts as portfolio- and debt-management tools. But individual investors can also find plenty of opportunities here. For example, financial futures offer yet another way to speculate on the behaviour of interest rates and on foreign exchange rate movements.

The financial futures market was established in the United States in response to the economic turmoil experienced during the 1970s. The US dollar had become unstable on the world market and was causing serious problems for multinational corporations. World interest rates had begun to behave in a volatile manner, which caused severe difficulties for companies, financial institutions and fund managers in general. All these parties needed a way to protect themselves from the ravages of wide fluctuations in the value of the dollar and interest rates, so a market for financial futures was born. Hedging provided the economic rationale for the market in financial futures, but speculators were quick to respond as they found the price volatility of these instruments attractive and at times highly profitable. Most of the financial futures trading in the United States occurs on just two exchanges—the Chicago Board of Trade and the Chicago Mercantile Exchange—with the London International Financial Futures Exchange (NYSE-LIFFE) also being a dominant global market. The Sydney Futures Exchange (now merged into the ASX Group) was the first exchange outside the United States to introduce financial futures (the 90-day bank-accepted bill contract).

Compared to the largest international exchanges, only a relatively limited number of financial futures are traded on the ASX. Over 80% of the ASX's trading volume in futures contracts relates to the management of, or speculation in, interest rate movements using 90-day bank bills, three- and 10-year Treasury bonds and 30-day interbank cash rate futures contracts. The management of sharemarket volatility using ASX 200 Index contracts makes up most of the ASX's remaining financial future trading volume. We now discuss these more important ASX futures contracts.

interest rate futures
futures contracts on debt securities.

market-index futures
futures contracts written on broad-based measures of sharemarket performance (for example, the ASX 200 Index), allowing investors to participate in the general movements of the sharemarket.

Interest Rates and Sharemarket Indices In October 1975, the first futures contract on debt securities, or **interest rate futures** as they are more commonly known, was established in the United States. Australia followed with its first interest rate futures contract in October 1979. Interest rate futures effectively allow investors to 'lock in' a known rate of interest in order to hedge against potentially unfavourable rate movements, say on borrowed funds, or to speculate on anticipated interest rate changes.

In February 1982, a new trading vehicle was introduced in the United States: the share-index futures contract. **Market-index futures**, as they are called, are contracts

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

THE HOTTEST FUTURES MARKETS—The top four futures contracts traded on the ASX during the 2010 fiscal year were:

Contract	Volume of Contracts ('000s)
Three-year Treasury bonds	30 196
Ninety-day bank bills	16 538
Ten-year Treasury bonds	11 274
ASX 200 Index	9 738

As you can see, all four are financial futures contracts. Commodities contracts (all agricultural and energy-related) totalled only 166 000 of the total of 73 230 000 futures contracts traded in that year.

Volume of contracts tells only part of the story. In terms of notional value—the value of assets underlying these agreements—financial futures contracts are even more dominant. For example, there is $100 000 in Treasury bonds underlying each T-bond contract; thus, the 41.4 million T-bond futures contracts traded in 2002 translates into $4.14 trillion worth of underlying Treasury bonds. Now, that's a lot of money!

pegged to broad-based measures of sharemarket performance. Again Australia quickly followed the US lead and introduced its first market-index contract in February 1983.

Market-index futures, such as the ASX 200 Index, are similar to the market-index options we discussed in Chapter 14, and allow investors to participate in the general movements of the entire sharemarket. These index futures (and other futures contracts) represent a type of *derivative security* because they, like options, derive their value from the price behaviour of the assets that underlie them. In the case of market-index futures, they are supposed to reflect the general performance of the sharemarket as a whole, as measured by a particular index such as the ASX 200. Thus, when the market, as measured by the ASX 200, goes up, the value of an ASX 200 futures contract should go up as well. Accordingly, investors can use market-index futures as a way to buy the market—or a reasonable proxy thereof—and thereby participate in broad market moves.

Contract Specifications In principle, financial futures contracts are like commodities contracts. They control large sums of the underlying financial instrument and are issued with a variety of delivery months. Figure 15.4 lists quotes for several interest rate contracts and the ASX 200 market-index contract. Holders of interest rate futures have a claim on a certain amount of the underlying debt security. This claim is quite large, although not specifically stated in Figure 15.4. It amounts to $100 000 worth of Treasury bonds and $1 million worth of bank-accepted bills. The pricing of interest rate futures will be examined in detail in the next section, although it can be noted that the value of an interest rate futures contract responds to interest rates exactly as the debt instrument that underlies it does. That is, when interest rates go up, the value of an interest rate futures contract goes down, and vice versa.

Sharemarket-index futures, however, are a bit different because the seller of one of these contracts is *not* obligated to deliver the *underlying shares* at the expiration date. Instead, ultimate delivery is in the form of cash (which is fortunate, because it would indeed be a task to make delivery of the 200 shares, as weighted, in the ASX 200 Index). The commodity underlying market-index futures, therefore, is *cash*. The amount of underlying cash is set at a certain multiple of the value of the underlying share index. For share price indices traded on the ASX, the multiple is $25. Thus, as the November 2010 ASX 200 Index stood at 4724, then the amount of cash underlying a single ASX 200 market-index futures contract would be $25 × 4724 = $118 100. Again, the amount is substantial. In terms of delivery months, the lives of financial futures contracts run from about 12 months or less for market-index futures to about five years or less for interest rate instruments.

The quote system for the share price index futures is set up to reflect the *market value of the contract* itself. Thus, when the price or quote of a financial futures contract increases, a long-term investor makes money. In contrast, when the price decreases, the short seller makes money.

Price behaviour is the only source of return to speculators, for even though shares and debt securities are involved in some financial futures, such contracts have no claim on the dividend and interest income of the underlying issues. Even so, huge profits (or losses) are possible with financial futures because of the large size of the contracts. When related to the relatively small initial margin deposit required to make

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 15.4 **Quotations on Selected Actively Traded Financial Futures**

The size of the trading unit, pricing unit and delivery months are all vital pieces of information included as part of the quotation system used with financial futures.

BENCHMARK FUTURES

		Prev Price	First Trade	High	Low	SETTLEMENT Price	Change	$ Value of Chg	Volume	Prev O/P
SPI 200 (A$25 x SPI200)										
Nov	10	4698.0	4722.0	4722.0	4722.0	4724.0	+26.0	650.00	24	943
Dec	10	4716.0	4718.0	4756.0	4718.0	4742.0	+26.0	650.00	29506	218561
Mar	11	4712.0	–	–	–	4739.0	+27.0	675.00	106	2153
Jun	11	4740.0	–	–	–	4766.0	+26.0	650.00	2	1027
Sep	11	4731.0	–	–	–	4757.0	+26.0	650.00	0	1647
Dec	11	4762.0	–	–	–	4788.0	+26.0	650.00	0	764
NIGHT Vol 5001		DAY Vol 29638		Previous O/P 225095						
30 Day Interbank Cash Rate (RBA Interbank Overnight Cash)										
Nov	10	95.270	95.270	95.270	95.270	95.270	0	0.00	500	97379
Dec	10	95.235	95.230	95.240	95.225	95.240	+0.005	12.33	17250	114230
Jan	11	95.235	95.225	95.225	95.225	95.235	0	0.00	2005	55384
Feb	11	95.180	95.185	95.185	95.175	95.180	0	0.00	2120	21018
Mar	11	95.145	95.130	95.150	95.120	95.155	+0.010	24.66	400	7372
Apr	11	95.125	95.085	95.085	95.085	95.130	+0.005	12.33	150	3259
May	11	95.050	–	–	–	95.075	+0.025	61.65	0	3052
Jun	11	95.000	95.035	95.035	95.035	95.035	+0.035	86.31	100	1776
Jul	11	94.950	–	–	–	94.985	+0.035	86.31	0	952
Aug	11	94.900	–	–	–	94.930	+0.030	73.98	0	1130
Sep	11	94.870	–	–	–	94.900	+0.030	73.98	0	400
Oct	11	94.820	–	–	–	94.865	+0.045	110.97	0	150
Nov	11	94.785	–	–	–	94.830	+0.045	110.97	0	100
NIGHT Vol 7867		DAY Vol 22525		Previous O/P 306202						
90-day Bank Bills (100 minus yield % p.a.)										
Dec	10	94.950	94.940	94.960	94.900	94.960	+0.010	24.06	22021	179443
Mar	11	94.830	94.810	94.860	94.770	94.850	+0.020	48.08	29412	160793
Jun	11	94.670	94.660	94.720	94.620	94.700	+0.030	72.07	17482	91630
Sep	11	94.550	94.540	94.610	93.530	93.590	+0.040	96.04	5081	56754
Dec	11	94.470	94.460	94.520	94.450	94.500	+0.030	72.00	3185	37451
Mar	12	94.400	94.390	94.460	94.390	94.450	+0.050	119.97	1858	39647
Jun	12	94.360	94.340	94.420	94.340	94.390	+0.030	71.96	2074	29556
Sep	12	94.320	94.320	94.390	94.310	94.350	+0.030	71.95	1375	10179
Dec	12	94.280	93.340	94.340	94.340	94.320	+0.040	95.91	50	2018
Mar	13	94.270	94.300	94.300	94.300	94.300	+0.030	71.93	100	1611
Jun	13	94.260	–	–	–	94.290	+0.030	71.93	0	63
NIGHT Vol 25886		DAY Vol 82638		Previous O/P 609290						
3 Year Bonds (100 minus yield % p.a.)										
Dec	10	94.860	94.860	94.910	94.820	94.890	+0.030	83.65	114074	480042
NIGHT Vol 36259		DAY Vol 114074		Previous O/P 480042						
3 Year Interest Rate Swaps (100 minus yield % p.a.)										
Dec	10	94.545	–	–	–	94.575	+0.030	83.46	0	0
NIGHT Vol 0		DAY Vol 0		Previous O/P 0						
10 Year Bonds (100 minus yield % p.a.)										
Dec	10	94.625	94.630	94.660	94.610	94.645	+0.020	157.80	25397	399147
NIGHT Vol 17496		DAY Vol 25397		Previous O/P 399147						
10 Year Interest Rate Swaps (100 minus yield % p.a.)										
Dec	10	94.165	–	–	–	94.185	+0.020	154.69	0	0
NIGHT Vol 0		DAY Vol 0		Previous O/P 0						

(*Source: Australian Financial Review*, 12 November 2010, p. 35. Courtesy of the *Australian Financial Review*.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

transactions in the financial futures markets, such price activity can mean very high rates of return—or very high risk of a total wipe-out.

Pricing Futures on Bank Bills and Treasury Bonds Because bank bills and Treasury bonds are normally traded in the money market on what is known as a discount basis, it was necessary to devise a special pricing system that would reflect the actual price movements of these futures contracts. To accomplish this, an **index price** system was developed whereby the yield is subtracted from an index of 100. Thus, when the yield on an underlying security, such as a Treasury bond, is 5.25%, the contract would be quoted at an index of 94.75 (100.00 – 5.25). Under such a system, when someone buys, say, a Treasury bond future and the index goes down (that is, interest rates move up), that individual has made money; when the index goes up (that is, interest rates move down), a short seller has made money. Note also that bank bill and Treasury bond contracts are all quoted in basis points, where 1 basis point equals 1/100 of 1%. Thus, a quote of, say, 93.01 on a 90-day bank bill contract translates into a yield of 6.99% (that is, 100.00 – 93.01).

index price
technique used to price bank bills and Treasury bonds futures contracts, by subtracting current yield from an index of 100.

The index price system traces only the price behaviour of the futures contract. To find the *actual price* or *value* of a 90-day bank bill, we use the formula:

Equation 15.2

$$\text{Price of a 90-day bank bill futures contract} = \frac{365 \times \$1\,000\,000}{365 + [I \times (90 \div 100)]}$$

where I = 100 minus the price quoted on the futures market.

Note that this price formula is based not on the quoted price index but on the *yield to maturity of the security itself*, which can be determined by subtracting the price index quote from 100. To see how it works, consider the December 2010 90-day bank bill futures contract quoted at 94.96; recall that this bank bill futures contract is priced to yield 5.04%. Now, using Equation 15.2, we can see that the price (or value) of this futures contract is:

$$\text{Price of a 90-day bank bill futures contract} = \frac{365 \times \$1\,000\,000}{365 + [5.04 \times (90 \div 100)]}$$

$$= \frac{\$365\,000\,000}{369.536}$$

$$= \$987\,725$$

The pricing of Treasury bond futures contracts differs from bank bill contracts because the underlying securities are long-term debt instruments that pay semi-annual interest. They pay a notional $6 interest every six months on each $100 of face value. To find the *actual price* or *value* of a Treasury bond, we use the formula:

Equation 15.3

$$\text{Price of a Treasury bond futures contract} = 1000 \times \left[\frac{\$6 \times (1 - V^n)}{i} + \$100 \times V^n\right]$$

where i = yield % p.a. ÷ 200
$V = 1 \div (1 + i)$
n = 6 (for three-year bond futures) or 20 (for 10-year bond futures)
All internal calculations should be rounded to eight decimal places.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Like the pricing of bank bill futures, Treasury bond futures prices are based on the *yield to maturity of the security itself*. To illustrate, consider a three-year bond futures quotation of 94.89. This gives a yield of 5.11% (100 – 94.89). Using Equation 15.3, we can see that the price for this futures contract is

$$\begin{aligned}\text{Price of a three-year Treasury bond futures contract} &= 1000 \times \left[\frac{\$6 \times 0.140474}{0.02555} + \$100 \times 0.859526\right] \\ &= 1000 \times [\$33.92735812 + \$85.9526] \\ &= \underline{\$119\ 879.95}\end{aligned}$$

Trading Techniques

Like commodities, financial futures can be used for hedging, spreading and speculating. Financial institutions and corporate treasury managers often use interest rate futures for hedging purposes in order to lock in the best interest rate possible. In addition, individual investors and portfolio managers use market-index futures for hedging purposes to protect their security holdings against temporary market declines. Financial futures can also be used for *spreading*. This tactic is popular with investors who adopt strategies of simultaneously buying and selling combinations of two or more contracts to form a desired investment position. Finally, financial futures are widely used for *speculation*.

Although investors can employ any one of the three trading strategies noted above, we will focus primarily on the use of financial futures by speculators and hedgers. We will first examine speculating in financial futures and then look at how these contracts can be used to hedge investments in shares and bonds.

Speculating in Financial Futures Speculators are especially interested in financial futures because of the size of the contracts. For instance, in November 2010, three-year Treasury bond futures were trading with underlying values of around $120 000, ASX 200 Index contracts were worth around $118 000, and 90-day bank-accepted bills were trading at some $988 000. With contracts of this size, it obviously doesn't take much movement in the underlying asset to produce big price swings—and therefore big profits. Interest rate futures are popular with investors, and can be used for just about any speculative purpose. For example, if you anticipate a rise in interest rates, you might consider going short (selling) on interest rate futures, because they should go down in value. Because margin is used and financial futures have the same source of return as commodities (appreciation in the price of the futures contract), return on invested capital (Equation 15.1) is used to measure the profitability of financial futures. Here is a detailed example of how bond futures can be used for speculation.

Going Short on an Interest Rate Contract Let's assume that you are anticipating a sharp rise in long-term interest rates. Because a rise in rates means that interest rate futures will drop in value, you decide to short sell a December three-year bond contract at, say, 94.89. Using Equation 15.3, the contract is worth $119 879.95, but the amount of money required to make the investment is only the initial margin of $955. Assume that interest rates do move up, and that as a result three-year bond futures fall to 94.39 giving a contract price of $118 424.83. Under such circumstances, you would buy back a December three-year bond contract (in order to cover the short position) and in the process make a profit of $1455.12. Remember, you originally sold a contract worth $119 879.95 and then bought it back sometime later at $118 424.83. As with any

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

investment, such a difference between what you pay for a security and what you sell it for is profit. In this case, the return on invested capital amounts to 152%. Again, however, this kind of return is due in no small part to the *enormous risk of loss* that the investor assumes.

Trading Market-Index Futures Most investors use market-index futures for speculation or hedging. (Market-index futures are similar to the *index options* introduced in Chapter 14; therefore, much of the discussion that follows also applies to index options.) Whether speculating or hedging, the key to success is *predicting the future course of the sharemarket*. Because you are 'buying the market' with market-index futures, it is important to get a handle on the future direction of the market via technical analysis (as discussed in Chapter 9) or some other technique. Once you have a feel for the market's direction, you can formulate a market-index futures trading or hedging strategy. For example, if you feel strongly that the market is headed up, you would want to go long (buy index futures); in contrast, if your analysis of the market suggests a sharp drop in equity values, you could make money by going short (selling index futures).

Assume, for instance, that you believe the market is undervalued and a move up is imminent. You can try to identify one or a handful of shares that should go up with the market (and assume the share selection risks that go along with this approach), or you can buy an ASX 200 Index future currently trading at, say, 4724. To execute this speculative transaction, you would need to deposit an initial margin of only, say, $7000. Now, if your expectations are correct and the market does rise so that the ASX 200 Index moves to 4775 by the expiration of the futures contract, you will earn a profit of $1275—that is, (4775 – 4724) × $25 = $1275. Given that this was earned on a $7000 investment, your return on invested capital would amount to a very respectable 18.2%. Of course, keep in mind that if the market drops by 140 points (or just 3%), you would have lost half of your investment.

Hedging with Market-Index Futures Market-index futures also make excellent hedging vehicles in that they provide investors with a highly effective way of protecting shareholdings in a declining market. Although this tactic is not perfect, it does enable investors to obtain desired protection against a decline in market value without disturbing their equity holdings. Here is how a so-called *short hedge* would work. Assume that an investor holds a total of 2000 shares in each of a dozen different companies and that the market value of this portfolio is around $235 000. If the investor thinks the market is about to undergo a temporary sharp decline, she can do one of two things: sell all of her shares or buy put options on each of the shares. Clearly, these alternatives are cumbersome and/or costly and therefore undesirable for protecting a widely diversified portfolio. The desired results could also be achieved, however, by *short selling market-index futures*. (Note that similar protection can be obtained in this hedging situation by turning to options and buying *a market-index put*.)

Suppose the investor short sells two ASX 200 Index futures contracts at 4724. Such contracts would provide a close match to the current value of the investor's portfolio (it would be valued at 2 × 4724 × $25 = $236 200), and yet the market-index futures contracts would require an initial margin deposit of only $14 000. Now, if the ASX 200 Index drops to 4525, the investor will make a profit from the short-sale transaction of almost $10 000. That is, because the index fell 199 points (4724 – 4525), the total profit will be $9950 (2 × 199 × $25). Ignoring taxes and transaction costs, this profit can be added to the portfolio (additional shares can be purchased at their new lower prices), the net result being a new portfolio position that will approximate the one that existed prior to the decline in the market.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

How well the 'before' and 'after' portfolio positions match will depend on how far the portfolio dropped in value. If the average price dropped about $0.41 per share in our example, the positions will closely match. However, this doesn't always happen; the price of some shares will change more than others, so the amount of protection provided by this type of short hedge depends on how sensitive the share portfolio is to movements in the market. Thus, what types of shares are held in the portfolio is an important consideration in structuring the market-index short hedge. For the investor who keeps that caveat in mind, hedging with market-index futures can be a low-cost yet effective way of obtaining protection against loss in a declining sharemarket.

Hedging Other Securities Just as market-index futures can be used to hedge share portfolios, *interest rate futures* can be used to hedge bond portfolios. Let's consider an interest rate hedge. If you held a substantial portfolio of bonds, the last thing you would want to see is a big jump in interest rates, which could cause a sharp decline in the value of your portfolio. Assume you hold around $300 000 worth of Treasury bonds, with an average (approximate) maturity of about three years. If you strongly believed that market rates are headed up, you could hedge your bond portfolio by short selling three three-year Treasury bond futures contracts. (Each T-bond futures contract is worth about $100 000, so it would take three of them to approximately cover a $300 000 portfolio.) Now, if rates do head up, the portfolio will be protected against loss—though, as we noted with shares above, the exact amount of protection will depend on how well the Treasury bond futures contracts parallel the price behaviour of this particular bond portfolio.

There is, of course, a downside to all this: *if market interest rates go down*, rather than up, *you will miss out on potential profits as long as the short hedge position remains in place*. This is so because all or most of the profits being made in the portfolio will be offset by losses from the futures contracts. Actually, this will occur with any type of portfolio (shares, bonds or anything else) that is tied to an offsetting short hedge, because when the short hedge is created, it essentially *locks in a position at that point*. Although you don't lose anything when the market falls, you also don't make anything when the market goes up. In either case, the profits you make from one position are offset by losses from the other.

Financial Futures and the Individual Investor

Financial futures can play an important role in your portfolio so long as you (1) thoroughly understand these investment vehicles, (2) clearly recognise the tremendous risk exposure of such vehicles, and (3) are fully prepared (financially and emotionally) to absorb some losses. Financial futures are highly volatile securities. Investment diversification is obviously essential as a means of reducing the potentially devastating impact of price volatility. Financial futures are exotic investment vehicles, but, if properly used, they can provide generous returns.

Options on Futures

futures options
options that give the holders the right to buy or sell a single standardised futures contract for a specified period of time at a specified strike price.

The evolution that began with listed share options and financial futures spread, over time, to interest rate options and market-index futures. Eventually, it led to the merger of options and futures and to the creation of the ultimate leverage vehicle: *options on futures contracts*. **Futures options** represent listed puts and calls on actively traded futures contracts. In essence, they give the holders the right to buy (with calls) or sell (with puts) a single standardised futures contract for a specific period of time at a

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

specified strike price. Table 15.4 lists the futures options available on the ASX in 2010. (US exchanges offer a much wider range of futures options, being available on both commodities and financial instruments.) For the most part, these puts and calls cover the same amount of assets as the underlying futures contracts—for example, $1 million in bank bills or $100 000 in Treasury bonds. Accordingly, they also involve the same amount of price activity as is normally found with the relevant futures contract.

Futures options have the same standardised strike prices, expiration dates and quotation system as other listed options. Depending on the strike price on the option and the market value of the underlying futures contract, these options can also be in-the-money or out-of-the-money. Futures options are valued like other puts and calls—by the difference between the option's strike price and the market price of the underlying futures contract (see Chapter 14). Moreover, they can also be used like any other listed option—that is, for speculating or hedging, in options writing programs or for spreading. The biggest difference between a futures option and a futures contract is that *the option limits the loss exposure* to the price of the option. The most you can lose is the price paid for the put or call, whereas there is no real limit to the amount of loss a futures investor can incur.

To see how futures options work, assume that you want to trade some ASX share price index contracts. You believe that the index will rally (increase) by 500 points over the next two or three months from its present level of, say, 4724 to around 5224. You can buy a futures contract at 4739 by depositing the required initial margin of $7000, or you can buy a futures call option with a 5000 strike price that is currently being quoted at 88.0. (Because the underlying futures contract is valued at $25 per index point, the total cost of this option would be 88.0 × $25 = $2200.) The call is an out-of-the-money option, because the market level of the index is less than the exercise price on the option. The figures that follow summarise what happens to both investments if the index increases by 500 and reaches 5224 by the expiration date and also what happens if the index drops by 500 to 4224. This represents a change in the index of just over 10.5% during the period of two or three months.

	Futures Contract		Futures Option	
	Dollar Profit (or Loss)	Return on Invested Capital	Dollar Profit (or Loss)	Return on Invested Capital
If index *increases by 500*	$12 125	173.2%	$5600	254.5%
If index *decreases by 500*	($12 875)	(183.9%)	$2200	(100.0%)

Clearly, in this case the futures option provides not only a substantially better rate of return (254.5% vs 173.2%), but also a much reduced exposure to loss ($2200 lost vs $12 875 lost). Futures options offer interesting investment opportunities, but, as always, they *should be used only by knowledgeable futures investors*.

TABLE 15.4 Futures Options: Puts and Calls on Futures Contracts

ASX 200 Index
Ninety-day bank-accepted bills
Three-year Treasury bonds
Ten-year Treasury bonds
Electricity

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

15.11 What is the difference between physical *commodities* and *financial futures*? What are their similarities?

15.12 What are the differences between a *forward agreement* and a *futures contract*?

15.13 Describe a *market-index future* and contrast it with an *interest rate future*.

15.14 Discuss how market-index futures can be used for speculation and for hedging. What advantages are there to speculating with market-index futures?

15.15 What are *futures options*? Explain how they can be used by speculators. Why would an investor want to use an option on an interest rate futures contract rather than the futures contract itself?

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

What You Should Know

LG 1 Describe the essential features of a futures contract and explain how the futures market operates. Commodities and financial futures are traded in futures markets. Today, there are more than a dozen US exchanges that deal in futures contracts, which are commitments to make (or take) delivery of a certain amount of some real or financial asset at a specified date in the future. In Australia, the ASX provides this market.

LG 2 Explain the role that hedgers and speculators play in the futures market, including how profits are made and lost. Futures contracts control large amounts of the underlying commodity or financial instrument and, as a result, can produce wide price swings and very attractive rates of return (or very unattractive losses). Such returns (or losses) are further magnified because all trading in the futures market is done on margin. Whereas a speculator's profit is derived directly from the wide price fluctuations that occur in the market, hedgers derive their profit from the protection they gain against adverse price movements.

LG 3 Describe the commodities segment of the futures market and the basic characteristics of these investment vehicles. Commodities like grains, metals and meat make up the traditional (commodities) segment of the futures market in the United States. Although a large portion of this market is concentrated in the agricultural segment of the economy, there is also a very active market for various metals and petroleum products. Commodities futures make up less than 0.3% of ASX futures trading. As the prices of commodities go up and down in the market, the respective futures contracts behave in much the same way; thus, if the price of wheat goes up, the value of wheat futures contracts rises as well.

Key Terms

cash market, *p. 498*
delivery month, *p. 498*
futures contract, *p. 498*
futures market, *p. 498*
hedgers, *p. 500*
initial margin deposit, *p. 502*
mark-to-market, *p. 502*
minimum margin, *p. 502*
open-outcry auction, *p. 500*
round-trip commission, *p. 501*
open interest, *p. 504*
settlement price, *p. 504*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

What You Should Know	Key Terms
LG 4 Discuss the various trading strategies that investors can use with commodities and explain how investment returns are measured. A variety of trading strategies can be used with commodities contracts, including speculating, spreading and hedging. Regardless of whether investors are in a long or a short position, they have only one source of return from commodities and financial futures: appreciation (or depreciation) in the price of the contract. Rate of return on invested capital is used to assess the actual or potential profitability of a futures transaction.	return on invested capital, *p. 505*
LG 5 Explain the difference between a physical commodity and a financial future, and discuss the growing role of financial futures in the market today. Whereas commodities deal with physical assets, financial futures deal with financial assets, such as bonds and market indices. Even though the nature of the underlying assets may differ, both are traded in the same place: the futures market. Financial futures are the newcomers, but this segment of the market has grown to the point where the volume of trading in financial futures now far exceeds that of commodities.	financial futures, *p. 509* index price, *p. 512* interest rate futures, *p. 509* market-index futures, *p. 509*
LG 6 Discuss the trading techniques that can be used with financial futures and note how these securities can be used in conjunction with other investment vehicles. There are two main types of financial futures traded on the ASX: interest rate futures and market-index futures. Interest rate futures involve various types of short- and long-term debt instruments. Market-index futures are pegged to broad movements in the sharemarket, as measured by the ASX 200 Index. These securities can be used for speculating, spreading or hedging. They hold a special appeal to investors who use them to hedge other security positions. For example, interest rate futures contracts are used to protect bond portfolios against a big jump in market interest rates.	futures options, *p. 515*

Discussion Questions

LG 1

Q15.1 Obtain a recent copy of the *Australian Financial Review* and look in the 'Market Wrap' section of the paper for the futures quotes.

a. List a representative example of futures contracts from different categories provided in the 'International Commodities and Futures' section.

b. How many commodities are traded in Australia? Why so few when compared to the United States?

LG 3 LG 5

Q15.2 Using settlement prices from Figures 15.2 and 15.4, find the value of the following commodity and financial futures contracts.

a. August 2011 fine wool

b. October 2011 greasy wool

c. June 2011 ASX 200 Index

d. December 2010 three-year Treasury bonds

LG 4 LG 6

Q15.3 Listed below are a variety of futures transactions. On the basis of the information provided, indicate how much profit or loss you would make in each of the transactions. (*Hint:* You might want to refer to Table 15.1 and Figures 15.2 and 15.4 for the size of the contract, pricing unit, etc., and the ASX website for initial margin amounts.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

a. The price of greasy wool goes up 12 cents a kilogram, and you hold three contracts.
b. You short sell two fine wool contracts at $12.45 per kilogram, and the price of fine wool drops to $10.25 per kilogram.
c. You recently purchased a 90-day bank bill contract at 94.96, and bank bill interest rates rise to 6.6%.
d. You short sell ASX 200 contracts when the index is at 4724 and cover when the index moves to 4500.
e. You recently purchased two three-year Treasury bond contracts at 94.89 and the index moves to 93.25.

Problems

All problems are available on **www.pearson.com.au/myfinancelab**

LG3 LG4 **P15.1** Jeff Rink considers himself a shrewd commodities investor. Not long ago he bought one July wheat contract at $172.25 per tonne, and he recently sold it at $180.50 per tonne. How much profit did he make? What was his return on invested capital if he had to put up a $450 initial margin deposit?

LG4 **P15.2** Shirley McCain is a regular commodities speculator. She is currently considering a short position in August fine wool, which is now trading at 1245. Her analysis suggests that August fine wool should be trading at about 1220 in a couple of months. Assuming that her expectations hold up, what kind of return on invested capital will she make if she short sells three August fine wool contracts (with each contract covering 2500 kilograms) by depositing an initial margin of $960 per contract?

LG5 LG6 **P15.3** Mark Seby is thinking about doing some speculating in interest rates. He thinks rates will fall and, in response, the price of three-year Treasury bond futures should move from 94.89, their present quote, to a level of about 96. Given a required margin deposit of $955 per contract, what would Mark's return on invested capital be if prices behave as he expects?

LG5 LG6 **P15.4** Annie Ryan has been an avid sharemarket investor for years. She manages her portfolio fairly aggressively and likes to short sell whenever the opportunity presents itself. Recently, she has become fascinated with market-index futures, especially the idea of being able to play the market as a whole. At the present time, Annie thinks the market is headed down, and she decides to short sell some ASX 200 Index futures. Assume she short sells three contracts at 4724 and has to make a margin deposit of $7000 for each contract. How much profit will she make, and what will her return on invested capital be if the market does indeed drop so that the ASX 200 Index contracts are trading at 4600 by the time they expire?

LG6 **P15.5** A wealthy investor holds four three-year Treasury bonds; these bonds are currently being quoted at 94, giving a total value of $465 006.28. The investor is concerned, however, that rates are headed up over the next six months, and he would like to do something to protect this investment. His stockbroker advises him to set up a hedge using T-bond futures contracts. Assume these contracts are now trading at 94.89.

a. Briefly describe how the investor would set up this hedge. Would he go long or short, and how many contracts would he need?
b. It's now six months later, and rates have indeed gone up. The investor's Treasury bonds are now being quoted at 92.5. Show what has happened to the value of the bond portfolio and the profit (or loss) made on the futures hedge.
c. Was this a successful hedge? Explain.

LG6 **P15.6** Not long ago, Vanessa Wong sold the company she founded for several million dollars (after taxes); she took some of that money and put it into the sharemarket. Today, Vanessa's portfolio of blue-chip shares is worth $2.3 million. Vanessa wants to keep her portfolio intact, but she is concerned about a developing weakness in the market for blue chips. She decides,

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

therefore, to hedge her position with six-month futures contracts on the ASX 200, which are currently trading at 4724.

a. Given that Vanessa wants to cover the full $2.3 million in her portfolio, describe how she would go about setting up this hedge.

b. If each contract required a margin deposit of $7000, how much money would she need to set up this hedge?

c. Assume that over the next six months share prices do fall, and the value of Vanessa's portfolio drops to $2.1 million. If the ASX 200 Index is at 4475, how much will she make (or lose) on the futures hedge? Is it enough to offset the loss in her portfolio? That is, what is her net profit or loss on the hedge?

d. Will she now get her margin deposit back, or is that a 'sunk cost'—gone forever?

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Case Problem 15.1 T.J.'S FAST TRACK INVESTMENTS: INTEREST RATE FUTURES

LG5 LG6 T.J. Patrick is a young, successful industrial designer in Perth who enjoys the excitement of commodities speculation. T.J. has been dabbling in commodities since he was a teenager—he was introduced to this market by his father, who is a grain buyer for one of the leading food processors. T.J. recognises the enormous risks involved in commodities speculating but feels that because he is still single, now is the perfect time to take chances. And he can well afford to. As a partner in a thriving industrial design company, T.J. earns more than $100 000 a year. He follows a well-disciplined investment program and annually adds $15 000 to $20 000 to his portfolio.

Recently, T.J. has started playing with financial futures—interest rate futures, to be exact. He admits he is no expert in interest rates, but he likes the price action these investment vehicles offer. This all started several months ago, when T.J. met Vincent Banano, a stockbroker who specialises in financial futures, at a party. T.J. liked what Vincent had to say (mostly how you couldn't go wrong with interest-rate futures) and soon set up a trading account with Vincent's company.

The other day, Vincent called T.J. and suggested he get into 90-day bank-accepted bill futures. As Vincent sees it, interest rates are going to continue to head up at a brisk pace, and T.J. should short sell some bank bill futures. In particular, he thinks that rates on bank bills should go up by another half-point (moving from about 5.5% up to 6%), and he recommends that T.J. short sells four contracts. This would be a $2000 investment, because each contract requires an initial margin deposit of $500.

QUESTIONS

1. Assume 90-day bank bill futures are now being quoted at 94.35.
   a. Determine the current price (underlying value) of this bank bill futures contract.
   b. What would this futures contract be quoted at if Vincent is right and the yield goes up by 0.5%?
2. How much profit will T.J. make if he short sells four contracts at 94.35 and bank bill yields do go up 0.5%—that is, if T.J. covers his short position when bank bill futures contracts are quoted at 93.85? Also, calculate the return on invested capital from this transaction.
3. What happens if rates go down? For example, how much will T.J. make if the yield on bank bill futures goes down by just 0.25%?
4. What risks do you see in the recommended short-sale transaction? What is your assessment of T.J.'s new interest in financial futures? How do you think it compares to his established commodities investment program?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 15.2 JIM AND POLLY PERNELLI TRY HEDGING WITH MARKET-INDEX FUTURES

LG5 LG6 Jim Pernelli and his wife, Polly, live in Townsville. Like many young couples today, the Pernellis are a two-income family; Jim and Polly are both university graduates and hold well-paying jobs. Jim has been an avid investor in the sharemarket for a number of years and over time has built up a portfolio that is currently worth nearly $175 000. The Pernellis' portfolio is well diversified, although it is heavily weighted in shares of high-quality, large companies. The Pernellis reinvest all dividends and regularly add investment capital to their portfolio. Up to now, they have avoided short selling and do only a modest amount of margin trading.

Their portfolio has undergone a substantial amount of capital appreciation in the last 18 months or so, and Jim is eager to protect the profit they have earned. And that's the problem, because Jim feels the market has pretty much run its course and is about to enter a period of decline. He has studied the market and economic news very carefully and doesn't believe the retreat will be of major magnitude or cover an especially long period of time. He feels fairly certain, however, that most, if not all, of the shares in his portfolio will be adversely affected by these market conditions—though they certainly won't all be affected to the same degree (some will drop more in price than others). Jim has been following market-index futures for some time and believes he knows the ins and outs of these securities pretty well. After careful deliberation, Jim and Polly decide to use the ASX 200 Index futures contract as a way to protect (hedge) their portfolio of shares.

QUESTIONS

1. Explain why the Pernellis' would want to use market-index futures to hedge their share portfolio, and note how they would go about setting up such a hedge. Be specific.
   a. What alternatives do Jim and Polly have to protect the capital value of their portfolio?
   b. What are the benefits and risks of using market-index futures for such purposes (as hedging vehicles)?
2. Assume that ASX 200 futures contracts are currently being quoted at 3256. How many contracts would the Pernellis have to buy (or sell) to set up the hedge?
   a. Say the value of the Pernellis' portfolio dropped 12% over the course of the market retreat. To what level must the market-index futures contract move in order to cover that loss?
   b. Given that a $7000 margin deposit is required to buy or sell a single ASX 200 futures contract, what would be the Pernellis' return on invested capital if the price of the futures contract changed by the amount calculated in part (**2a**)?
3. Assume that the value of the Pernellis' portfolio declined by $32 000, while the level of an ASX 200 Index futures contract moved from 3256 to 2776. (Assume that Jim and Polly short sold two futures contracts to set up the hedge.)
   a. Add the profit from the hedge transaction to the new (depreciated) value of the share portfolio. How does this amount compare to the $175 000 portfolio that existed just before the market started its retreat?
   b. Why did the market-index futures hedge fail to give complete protection to the Pernellis' portfolio? Is it possible to obtain *perfect* (dollar-for-dollar) protection from these types of hedges? Explain.
4. What if, instead of hedging with futures contracts, the Pernellis decide to set up the hedge by using *futures options*? Now, suppose a put on the ASX 200 Index futures contract (strike price = 3250) is currently quoted at 58, and a comparable call is quoted at 23.5. Use the same portfolio and futures price conditions as set out in part **3** to determine how well the portfolio would be protected. (*Hint:* Add the net profit from the hedge to the new depreciated value of the share portfolio.) What are the advantages and disadvantages of using futures options, rather than the market-index futures contract itself, to hedge a share portfolio?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Excel with Spreadsheets

One of the unique features of futures contracts is that they have only one source of return—the capital gains that can accrue when price movements have an upward bias. Remember that there are no current cash flows associated with this financial asset. These instruments are known for their volatility due to swings in prices and the use of leverage upon purchase. With futures trading done on margin, small amounts of capital are needed to control relatively large investment positions.

Assume that you are interested in investing in commodity futures—specifically, greasy wool futures contracts. Refer to Figure 15.2. Suppose you had purchased five June 2011 greasy wool contracts at the settlement price of 1025. The required amount of investor capital to be deposited with a broker at the time of the initial transaction is $825 per contract. **Create a spreadsheet** to model and answer the following questions concerning the investment in futures contracts.

Questions

1. What is the total amount of your initial deposit for the five contracts?
2. What is the total amount of kilograms of greasy wool that you control?
3. What is the purchase price of the greasy wool commodity contracts you control according to the June settlement date?
4. Assume that June greasy wool actually settles at 1125; you decide to sell and take your profit. What is the selling price of the greasy wool commodity contracts?
5. Calculate the return on invested capital earned on this transaction (remember that the return is based on the amount of funds actually invested in the contract, rather than on the value of the contract itself).

Commodity and financial futures allow investors to speculate on or hedge the direction of interest rates and sharemarkets, the prices of agricultural products such as wheat, or the price of other commodities such as electricity. These assets are not for the fainthearted or the uninformed. Keeping up with the specific trading characteristics and daily prices of these contracts is a must for the serious investor. Up-to-the-minute information usually has a cost, but it is essential for investors in financial futures. The websites listed here provide free educational material. Some of these sites also offer—again, for a fee—the real-time price information that futures investors need.

WEBSITE	URL
Australian Financial Markets Association	www.afma.com.au
Australian Securities Exchange	www.asx.com.au
Chicago Mercantile Exchange Group	www.cmegroup.com
NYSE Liffe	www.euronext.com

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CFA EXAM QUESTIONS

DERIVATIVE SECURITIES

Following is a sample of 12 Level 1 CFA exam questions that deal with many of the topics covered in Chapters 14 and 15 of this text, including basic properties of options and futures, pricing characteristics, return behaviour and various option strategies.

1. The open interest on a futures contract at any given time is the total number of outstanding:
   a. contracts
   b. unhedged positions
   c. clearinghouse positions
   d. long and short positions

2. A silver futures contract requires the seller to deliver 5000 Troy ounces of silver. An investor sells one July silver futures contract at a price of $8 per ounce, posting a $2025 initial margin. If the required maintenance margin is $1500, the price per ounce at which the investor would first receive a maintenance margin call is *closest to*:
   a. $5.92
   b. $7.89
   c. $8.11
   d. $10.80

3. Most futures contracts are closed through:
   a. delivery
   b. arbitrage
   c. reversing trades
   d. exchange-for-physicals

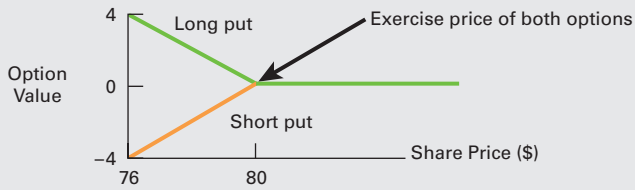
4. A call is 'in-the-money' when:
   a. the share price is above the exercise price
   b. the share price is below the exercise price
   c. the share price and the exercise price are equal
   d. not enough information to tell

5. The following price quotations are for exchange-listed options on Primo Corporation common share.

Company	Strike	Expiration	Call	Put
65⅛	60	Feb	7¼	7/16

   Ignoring transaction costs, how much would a buyer have to pay for one call option contract?
   a. $7.25
   b. $72.50
   c. $398.75
   d. $725.00

6. The following diagram shows the value of a put option at expiration:



   Ignoring transaction costs, which of the following statements about the value of the put option at expiration is TRUE?
   a. The value of the short position in the put is $4 if the share price is $76.
   b. The value of the long position in the put is –$4 if the share price is $76.
   c. The long put has value when the share price is below the $80 exercise price.
   d. The value of the short position in the put is zero for share prices equaling or exceeding $76.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

7. Which of the following statements describing options is false?
   a. A put option gives its holder the right to sell an asset for a specified price on or before the option's expiration date.
   b. A call option will be exercised only if the market value of the underlying asset is more than the exercise price.
   c. A put option's profit increases when the value of the underlying asset increases.
   d. A put option will be exercised only if the market value of the underlying asset is less than the exercise price.

8. A put on Share X with a strike price of $40 is priced at $2.00 per share, while a call with a strike price of $40 is priced at $3.50. What is the maximum per share loss to the *writer* of the uncovered put and the maximum per share gain to the writer of the uncovered call?

	Maximum Loss to Put Writer	Maximum Gain to Call Writer
a.	$38.00	$ 3.50
b.	$38.00	$36.50
c.	$40.00	$ 3.50
d.	$40.00	$40.00

9. An investor buys a call option with a $25 exercise price priced at $4 and writes a call option with a $40 exercise price priced at $2.50. If the price of the share increases to $50 at expiration and the options are exercised on the expiration date, the net profit at expiration (ignoring transaction costs) is:
   a. $8.50
   b. $13.50
   c. $16.50
   d. $23.50

10. An investor purchases share for $38/share and sells call options on that share with an exercise price of $40 for a premium of $3/share. Ignoring dividends and transactions, what *maximum* profit can the investor earn if the position is held to expiration?
   a. $2
   b. $3
   c. $5
   d. None of the above

11. The current price of an asset is 75. A three-month, at-the-money call option on the asset has a current value of 5. At what value of the asset will a covered call writer break even at expiration?
   a. $70
   b. $75
   c. $80
   d. $85

12. An at-the-money protective put position (comprising owning the share and buying a put):
   a. protects against loss at any share price below the strike price of the put
   b. has limited profit potential when the share price rises
   c. returns any increase in the share's value, dollar for dollar, less the cost of the put
   d. provides a pattern of returns similar to a stop loss order at the current share price

(*Source:* From Professional Exam Review. *CFA Candidate Study Notes, Level 1,* Volume 4, 2e. © 2009 Delmar Learning, a part of Cengage Learning, Inc. Reproduced by permission. <www.cengage.com/permissions>.)

Answers: 1. a; 2. c; 3. c; 4. a; 5. d; 6. c; 7. c; 8. a; 9. b; 10. c; 11. a; 12. c.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

WEB CHAPTER

16

Investing in Preference Shares

LEARNING GOALS

After studying this chapter, you should be able to:

LG 1 Describe the basic features of preference shares, including sources of value and exposure to risk.

LG 2 Discuss the rights and claims of preference shareholders, and note some of the popular issue characteristics that are often found with these securities.

LG 3 Understand the various measures of investment worth, and identify several investment strategies that can be used with preference shares.

What do preference shares in Australia and yoyos have in common? Both have swung in and out of fashion over the years.

One should never predict the end of the phenomenon, as did Tim Neilson for preference shares in an article entitled 'The End of Redeemable Preference Shares' published in 1999 in the *Journal of Australian Taxation* (www.austlii.edu.au/au/journals/JIATax/1999/13.html). Neilson concluded that 'redeemable preference shares were largely redundant as a means of capital raising for most companies'.

As this chapter explains, preference shares are hybrid securities that carry features of both debt and equity. Issuers prefer to have them classified as equity, and have gone to great lengths over the years to adapt the features of preferences shares to overcome the hurdles put in place periodically by legislative and regulatory changes.

Preference shares in Australia have become 'converting', 'reset', 'remarketing', 'mandatory convertible' and 'partially protected', names that reflect a myriad of conditions on dividend rates, changes to dividend rates, timing of redemption, consideration when redeemed, flexibility and security.

No sooner are preference shares in one form classified as debt, then they are issued in a new form with features that address the particular regulatory concern and which allows them to be considered equity-like. Like yoyos, the classification of preference shares has become something of a game played between issuers and regulators. Up to equity, down to debt, up to equity, down to debt . . .

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Preference Shares

LG1 LG2

What would you think of a share that promised to pay you a fixed annual dividend for life? If you're an income-oriented investor, the offer might sound pretty good. But where would you find such an investment? Right on the ASX, where hundreds of these securities trade every day, in the form of *preference shares*—a type of security that has some features similar to ordinary shares and other features similar to debt. Because preference shares contain elements of *both* debt and equity, they are viewed as a type of *hybrid security*.

preference share
a share that has a prior claim (ahead of ordinary shares) on the income and assets of the issuing company.

Preference shares carry fixed dividends that are paid half-yearly and are expressed either in dollar terms or as a percentage of the share's par (or stated) value. Most preference shares in Australia are issued by banks and other large companies, though almost any public company can issue preference shares. From the perspective of the issuing company, preference shares have several advantages and disadvantages. Preference shareholders, like bondholders, typically do not have voting rights, and they are not technically owners of the company as ordinary shareholders are. For that reason, a company that wants to issue capital but does not want to dilute either the voting rights of existing shareholders or the company's reported earnings per share may decide to issue preference shares rather than equity. Another advantage is that preference shareholders cannot force a company into bankruptcy if the company fails to pay dividends on the preference shares, and that makes these shares more attractive than debt to the issuer. On the other hand, companies that miss preferred dividend payments generally have to make these shares up before they can pay dividends to ordinary shareholders. The biggest disadvantage of preference shares is their tax treatment. Companies cannot deduct preference dividends as a business expense. Because preference shares do obligate a company to make regular dividend payments yet do not offer the company a tax break, preference shares are issued less often than either debt or common equity.

Preference Shares in Australia

The market for preference shares in Australia has undergone many changes as taxation and regulatory changes have impacted their supply and demand. The first major change was the emergence of converting preference shares (CPS) in the early 1990s, which were similar to bonds but could be converted into shares at maturity rather than being paid in cash.

In 1998, CPS were reclassified as debt on the balance sheet, which made them less attractive to suppliers, especially the banks. In late 2000 the basic CPS structure was modified into reset preference shares (RPS), which paid a fixed rate of return for a certain period, after which they could be converted to ordinary shares, repaid in cash or rolled over ('reset') at the issuer's choice, and a price set by the issuer.

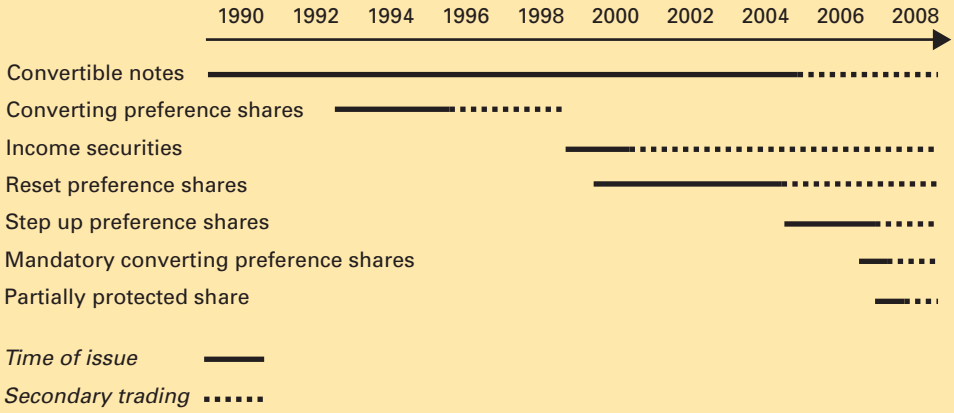
Further changes in 2004, including the introduction of International Financial Reporting Standards (IFRS) and adjustments by the Australian Prudential Regulation Authority (APRA) to what banks are allowed to include in their regulatory capital, meant that RPS were also reclassified as debt on the balance sheet. Alternatives developed since that time include remarketing preference shares, mandatory convertible preference shares and partially protected shares. The periods of issue of these securities, and their relative popularity, are reported in Table 16.1 and Figure 16.1.

Advantages and Disadvantages

Without a doubt, the number one reason that investors are attracted to preference shares is the current income they provide. Such returns compare favourably to those

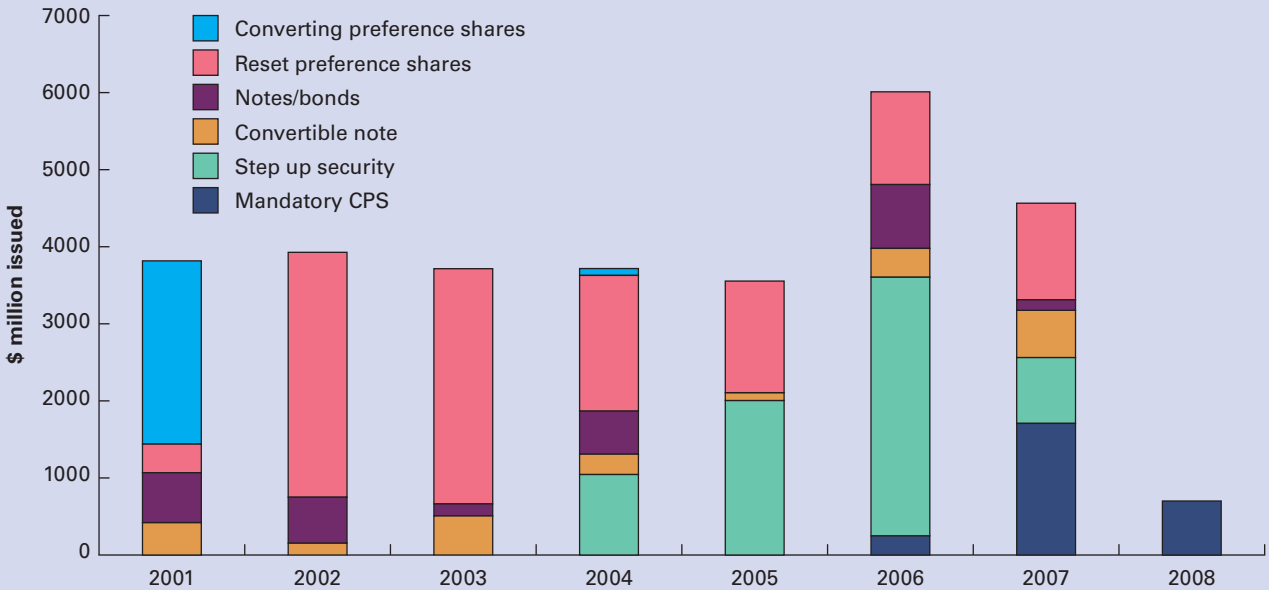
Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 16.1 Major Types of Australian Hybrid Security Issuance Time Line



(*Source:* Michael Saba and David Finlay (Goldman Sachs JBWere) 2008, 'Australian Hybrid Securities: The Evolution Continues', <www.melbournecentre.com.au/mmfc/2008/Hybrids_Evolution.pdf>.)

FIGURE 16.1 Issuance of Australian Hybrid by Security Type, 2001–2008



(*Source:* Michael Saba and David Finlay (Goldman Sachs JBWere) 2008, 'Australian Hybrid Securities: The Evolution Continues', <www.melbournecentre.com.au/mmfc/ 2008/Hybrids_Evolution.pdf>.)

available on other fixed-income securities and dividend-paying ordinary shares, and they explain in large part why income-oriented investors are so attracted to these securities. Another reason for investing in preference shares is the level of safety they offer investors. One drawback of preference shares is their susceptibility to inflation and high interest rates. That is, like many other fixed-income securities, preference shares values go down when rates go up. Thus, these securities simply have not proved to be satisfactory long-term hedges against inflation. Another disadvantage is that preference dividends may be suspended, or 'passed', if the earnings of the issuer drop off. Unlike the coupon payments on a bond, dividends on preference shares have no legal

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

backing, and failure to pay them does not lead to default. Preference shares also lack substantial capital gains potential. Although it is possible to enjoy fairly attractive capital gains from preference shares when interest rates decline dramatically, these amounts generally do not match the price performance of ordinary shares.

Sources of Value With the exception of convertible preference shares, the value of high-grade preference shares is a function of the dividend yields they provide. More specifically, the value (or market price) of a preference share is closely related to prevailing market rates: as the general level of interest rates moves up, so do the yields on preference shares, and their prices decline accordingly. When interest rates drift downwards, so do the yields on preference shares, as their prices rise. Just like bond prices, therefore, *the price behaviour of a high-grade preference share is inversely related to market interest rates.* Moreover, its price is directly linked to the issue's level of income. That is, other things being equal, the higher the dividend payment, the higher the market price of an issue. Given these factors, the price of a preference share can be defined as follows:

Equation 16.1

$$\text{Price of a preference share} = \frac{\text{Annual dividend income}}{\text{Prevailing market yield}}$$

This equation is simply a variation of the standard dividend yield formula, but here we solve for the price of the issue. (You might also detect a similarity between this formula and *the zero-growth dividend valuation model* introduced in Chapter 8—see Equation 8.7 on page 261.) The equation shown here (16.1) is used to price preference shares and to compute their future price, given an estimate of expected market yields. For example, a $2.50 preference share (meaning the share pays a dividend of $2.50 per year) would be priced at $20.83 if the prevailing market yield were 12%:

$$\text{Price} = \frac{\$2.50}{0.12} = \$20.83$$

Note that as market yield decreases, you get higher preference share prices, thus giving the inverse relationship between price and yield.

The yield that a preference share offers (and therefore its market value) is a function of not only market interest rates but also the issue's credit quality: *the lower the quality of a preference share, the higher its yield.* Such behaviour is, of course, compatible with the risk–return tradeoffs that usually exist in the marketplace. Fortunately, preference shares are rated, much like bonds, by Moody's and Standard & Poor's. The value of a preference share is also affected by issue characteristics such as call features and sinking-fund provisions. For example, freely callable preference shares normally provide higher yields than non-callable issues because of their greater call risk. Quality and issue features, however, have only slight effects on price behaviour over time, and they certainly do not compare in importance with the movement of market yields.

Issue Characteristics

Preference shares possess features that not only distinguish them from other types of securities but also help to differentiate one from another. For example, preference shares may be issued as convertible or non-convertible, although the majority fall into the non-convertible category. A convertible preference share has a **conversion feature** that allows the holder to convert it into a specified number of shares of the issuing company. Because convertible preference shares are, for all intents and purposes, very much like convertible bonds, they are discussed in Chapter 10. For our purposes here, we will concentrate on *non-convertible issues*, although many of the features we are about to discuss apply

conversion feature
allows the holder of a convertible preference share to convert to a specified number of shares of the issuing company.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

equally to convertible preference shares. In addition to convertibility, investors should be aware of several other important features of preference shares; they include the rights of preference shareholders and the special provisions (such as those pertaining to passed dividends or call features) that are built into preference share issues.

Rights of Preference Shareholders The contractual agreement of a preference share specifies the rights and privileges of preference shareholders. The most important of these deal with the level of annual dividends, the claim on income, voting rights and the claim on assets. The issuing company agrees that it will pay preference shareholders a (minimum) fixed level of dividends and that such payments *will take priority over ordinary share dividends*. The only condition is that the company generate income sufficient to meet the preference dividend requirements. However, the firm is not legally bound to pay dividends. Of course, it cannot pass dividends on preference shares and then pay dividends on ordinary shares. To do so would violate the preference share's prior claim on income.

adjustable-rate (floating-rate) preference shares
preference shares that pay dividends that are adjusted periodically in line with yields on certain Treasury issues.

Although most preference shares are issued with dividend rates that remain fixed for the life of the issue, some preference shares have floating dividend rates. Known as **adjustable-rate** (or **floating-rate**) **preference shares**, these issues adjust their dividends periodically in line with yields on specific Treasury issues, although minimum and maximum dividend rates are usually established as a safeguard for investors and issuers. Resets are an example of an adjustable rate preference share.

Even though they hold an ownership position in the company, preference shareholders normally have no voting rights. However, if conditions deteriorate to the point where the company needs to pass one or more consecutive dividends, preference shareholders may be given the right to elect a certain number of corporate directors so that their views can be represented. And if liquidation becomes necessary, the holders of preference shares are given a prior claim on assets. These preference claims, limited to the par or stated value of the share, must be satisfied before the claims of the ordinary shareholders. Of course, this obligation does not always mean that the full par or stated value of the preference shares will be recovered, because the claims of senior securities (like bonds) must be met first.

INVESTOR FACTS

HOW TO HIDE FROM RISING RATES—One of the biggest fears of fixed-income investors (including preference share investors) is rising interest rates. To hedge against rising rates, investors often turn to *adjustable-rate preference shares*, the cash dividends of which are adjusted periodically to reflect market conditions. The dividends on adjustable preference shares usually have a floor and a ceiling, but that still leaves plenty of room to move up or down with market rates. When rates move up, rather than the price of the issue going down, the dividend payment goes up instead. Bottom line: there's far less price volatility with adjustables than with fixed-rate preference shares.

Preference Share Provisions There are three preference share provisions that investors should be well aware of *before* making an investment in a preference security. Especially important is the obligation of the issuer in case any dividends are missed. In addition, you should determine whether the share has a call feature and/or a sinking fund provision. Let's start by looking at how passed dividends are handled, which depends on whether the preference share is issued on a cumulative or a non-cumulative basis.

cumulative provision
a provision requiring that any preference dividends that have been passed must be paid in full before dividends can be restored to ordinary shareholders.

in arrears
having outstanding unfulfilled preference dividend obligations.

Fortunately for investors, most preference shares are issued on a **cumulative** basis. This means that any preference dividends that have been passed *must be made up in full* before dividends can be paid to ordinary shareholders. Any outstanding unfulfilled preference dividend obligations are said to be **in arrears**, and so long as dividends on preference shares remain in arrears, a corporation may not make dividend payments on ordinary shares. Assume, for example, that a company normally pays a $1 dividend on its preference shares but has missed the dividend for three years in a row. In this case, the company has preference dividends in arrears of $3 a share. It must meet these past dividends, along with the next dividend, before it can pay dividends to ordinary shareholders. The company could fulfil this obligation by paying, say, $2 per share to the preference shareholders at the next dividend date and $3 per share at the following one (with the $3 covering the remaining $2 in arrears and the current $1 payment). If the preference shares

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

non-cumulative provision
a provision found on some preference shares excusing the issuing company from having to make up any past dividends.

had carried a **non-cumulative provision**, the issuing company would have been under no obligation to make up any of the passed dividends. Of course, the company could not make dividend payments on ordinary shares either. But it could resume such payments simply by meeting the next preference dividend. Other things being equal, a cumulative preference share should be more highly valued than an issue without such a provision. That is, the cumulative feature should increase the price (and in so doing, lower the yield) of these issues.

CONCEPTS IN REVIEW
Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

16.1 Define the term *preference share*. What types of prior claims do preference shareholders enjoy?

16.2 In what ways is a preference share like equity? In what ways is it like a bond?

16.3 What are the advantages and the disadvantages of investing in preference shares?

16.4 Distinguish a *cumulative* preference share from a *callable* preference share. Do cumulative dividend provisions and call features affect the investment merits of preference issues? Explain.

Valuing and Investing in Preference Shares

LG 3

As we just saw, although preference shares may be a form of equity, they behave in the market more like a bond than a share. Therefore, it seems logical that *preference shares should be valued much like bonds*, with market interest rates and investment quality playing key roles. Similarly, when it comes to investing in preference shares, you would expect interest rates (either the level of market interest rates or the movements therein) to play key roles in preference share investment strategies. And that's exactly what you find, as the two most widely used preference share strategies involve either going after high levels of current income or seeking capital gains when market rates are falling.

Putting a Value on Preference Shares

Evaluating the investment suitability of preference shares involves assessing comparative return opportunities. Let's look now at some of the return measures that are important to preference shareholders, and then at the role that agency ratings play in the valuation process.

Dividend Yield: A Key Measure of Value Dividend yield is critical to determining the price and return behaviour of most preference shares. It is computed according to the following simple formula:

Equation 16.2

$$\text{Dividend yield} = \frac{\text{Annual dividend income}}{\text{Current market price of the preference share}}$$

dividend yield
a measure of the amount of return earned in the form of annual dividends.

Dividend yield is a measure of the amount of return earned on annual dividends, and is the basis upon which comparative preference share investment opportunities are evaluated. (It is basically the same as the *dividend yield* used in Chapter 7 with ordinary shares and is comparable to the *current yield* measure used with bonds, as described in Chapter 11.)

Here's how dividend yield works:

$$\text{Dividend yield} = \frac{\$3.75}{\$63} = 5.95\%$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Alcoa Inc. has preference shares outstanding with a par value of $100, and in January 2010 these shares had a market value of $63. The dividend rate on these shares, expressed as a percentage of par value, is 3.75%, meaning that each preference share receives $3.75 in dividends per year (0.0375 × $100). Therefore, with the share price at $63 in this example, the dividend yield to investors is about 6%. If the price of this preference share moves down (to, say, $50 a share), the dividend yield increases (in this case, to 7.5%). In practice, we would expect investors to compute or have available a current dividend yield measure for each preference share under consideration and then to make a choice by comparing the yields on the alternative preference share—along with, of course, the risk and issue characteristics of each.

Expected Return Whereas long-term investors may consider dividend yield a key factor, that's not necessarily the case with short-term traders. Instead, these traders generally focus on anticipated price behaviour and the expected return from buying and selling an issue over a short period of time. Thus, *the expected future price of a preference share* is important to short-term traders. Expected price can be found by first forecasting future market interest rates and then using that information to determine expected future price. To illustrate, suppose a preference share pays $3 in dividends and its yield is expected to decline to 6% within the next three years. If such market rates prevail, then three years from now, the issue will have a market price of $50 (using Equation 16.1, annual dividend ÷ yield = $3 ÷ 0.06 = $50). This forecasted price, along with the current market price and level of annual dividends, would then be used in either the expected return or holding period return formula to assess the return potential of the investment.

To continue with our example, if the share were currently priced at $28, it would have an *expected return* (over the three-year investment horizon) of a very attractive 30.3%. This can be found by using *the IRR approach* we first introduced in Chapter 4 and then applied (as a measure of expected return) to ordinary shares in Chapter 8 and to bonds in Chapter 11. In essence, you'd want to find the discount rate, in the present-value–based yield formula, that equates the expected future cash flows from this preference share to its current market price of $28 a share. (The preference share's cash flows are the $50 price in three years, plus the annual dividends of $3 a share over each of the next three years.) As it turns out, that discount rate equals 30.3%; at that rate, the present value of the future cash flows amounts to $28 a share. (As an aside, *this problem can readily be solved with a financial calculator* by letting **N** = 3, **PV** = 28, **PMT** = −3, **FV** = −50 and then solve for **I**. Try it. You should end up with a value (return) of 30.34.)

You now have a measure of the relative attractiveness of this preference share. Of course, other things (like risk) being equal, the higher the expected return, the more appealing the investment. (Note that if the above performance had occurred over a period of six months, rather than three years, you would use the *holding period return* measure to assess the potential return of this preference share. See Chapter 4 for details.)

book value (net asset value) a measure of the amount of debt-free assets supporting each preference share.

Book Value The **book value** (or **net asset value**) of a preference share is a measure of the amount of debt-free assets supporting each preference share. In this regard, note that it's the *total book value of the company* that is of concern here, not just the amount of preference equity listed on the balance sheet. That's because, relative to common equity, preference shareholders have a prior claim on all the net assets of the company. Thus, book value per share is found by subtracting all the liabilities of the company from its total assets and dividing the difference by the number of preference shares outstanding. This measure, in essence, reflects the quality of an issue with regard to the preference share's *claim on assets*. Obviously, a preference share with a book

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

value of $150 per share enjoys generous asset support and more than adequately secures a par value of, say, $25 a share. Net asset value is most relevant when it is used relative to an issue's par (or stated) value. Other things being equal, *the quality of an issue improves as the margin by which book value exceeds par value increases.*

fixed charge coverage
a measure of how well a company is able to cover its preference share dividends.

Fixed Charge Coverage **Fixed charge coverage** is a measure of how well a company is able to cover its preference dividends. Here, attention is centered on the company's ability to service preference dividends and live up to the preference's preferential *claim on income*. As such, fixed charge coverage is important in determining the quality of a preference share. Fixed charge coverage is computed as follows:

Equation 16.3

$$\text{Fixed charge coverage} = \frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Interest expense} + [\text{Preference dividends} \div (1 - t)]}$$

Note in this equation that preference dividends are adjusted by a factor of $(1 - t)$ where t = corporate tax rate. This adjustment is used with 'traditional' preference shares and takes into account the fact that *a company pays dividends from the earnings that are left after taxes*. By making the indicated adjustment, you essentially place preference dividends on the same basis as interest paid on bonds, which is a tax-deductible expense. *Normally, the higher the fixed charge coverage, the greater the margin of safety*. A ratio of 1.0 means the company is generating just enough earnings to meet its preference dividend payments—not a very healthy situation. A coverage ratio of 0.7 suggests the potential for some real problems, whereas a coverage of, say, 7.0 indicates that preference dividends are fairly secure.

As noted with the ordinary share interest coverage ratio (see the times interest earned measure in Chapter 7, Equation 7.7, page 228), fixed charge coverage is often computed with EBITDA in the numerator, rather than EBIT. Since earnings before interest, taxes, depreciation and amortisation will normally be more than EBIT, use of EBITDA will result in a higher coverage ratio—something that should be taken into consideration when assessing this measure. Also, if you're dealing with one of the newer debt-like preference shares, then you can *drop the adjustment factor in the denominator*, because preference dividends are treated just like interest expense in these cases. Doing so will, of course, lead to a higher fixed-charge coverage—the denominator will be smaller, so other things being equal, the fixed-charge coverage ratio will be higher.

Agency Ratings Standard & Poor's has long rated the investment quality of preference shares, and since 1973, so has Moody's. S&P uses basically the same rating system as it does for bonds; Moody's uses a slightly different system. For both agencies, the greater the likelihood that the issuer will be able to pay dividends promptly, the higher the rating. Much like bonds, the top four ratings designate *investment-grade* (high-quality) preference shares. Although preference shares come in a full range of agency ratings, most tend to fall in the medium-grade categories (A and Baa), or lower. Generally speaking, higher agency ratings reduce the market yield of an issue and increase its interest sensitivity. Agency ratings not only eliminate much of the need for fundamental analysis, but also help investors to get a handle on the yield and potential price behaviour of an issue.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Investment Strategies

There are several investment strategies that preference shareholders can follow. Each is useful in meeting a different investment objective, and each offers a different level of return and exposure to risk.

Looking for Yields This strategy represents perhaps the most popular use of preference shares and is ideally suited for serious long-term investors. *High current income* is the objective, and the procedure basically involves seeking out those preference shares with the most attractive yields. While yield is necessarily a key variable, consideration is also given to such features as the quality of the issue, whether the dividends are cumulative, and the existence of any call or sinking-fund provisions.

Certainty of income and safety are important in this strategy, because yields are attractive only as long as dividends are paid. Some investors never buy anything but the highest-quality preference shares. Others sacrifice quality in return for higher yields when the economy is strong and use higher quality issues only during periods of economic distress. Whenever you invest in preference shares that are not in one of the top four agency ratings, you should recognise the speculative position you are assuming. This is especially so with preference shares, since their dividends lack legal enforcement.

Like ordinary shares, most preference shares pay dividends on a half-yearly basis. Even so, some special breeds of preference shares offer not only attractive yields but also monthly income. One of these is a type of hybrid security known as a monthly income preference share (MIPS, for short). Although these securities do offer attractive yields, they are a very unusual type of investment vehicle. As such, you should learn as much as you can about these and other specialty securities before investing in them.

Trading on Interest Rate Swings Rather than assuming a 'safe' buy-and-hold position, the investor who trades on movements in interest rates adopts an aggressive short-term trading posture. This is done for one major reason: *capital gains*. Although a high level of return is possible with this approach, it comes with higher risk exposure. Because preference shares are fixed-income securities, the market behaviour of *investment-grade issues* is closely linked to movements in interest rates. If market interest rates are expected to decline substantially, attractive capital gains opportunities may be realised from preference shares.

As is probably clear by now, this strategy is identical to that used by bond investors. In fact, many of the same principles used with bonds apply to preference shares. For example, it is important to select high-grade preference shares, because interest sensitivity is a key ingredient of this strategy. Moreover, margin trading is often used to magnify short-term holding period returns. A basic difference is that the very high leverage rates of bonds are not available with preference shares, because they fall under the same, less generous margin requirements as ordinary shares. The investment selection process is simplified somewhat as well, because neither maturity nor the size of the annual preference dividend (which is equivalent to a bond's coupon) has any effect on the *rate of price volatility*. That is, a $2 preference share will appreciate just as much (in percentage terms) as an $8 preference share for a given change in market yields.

Speculating on Turnarounds This speculative investment strategy can prove profitable if you're nimble enough to catch a trading opportunity before everyone else does. The idea is to find preference shares whose dividends have gone into arrears and whose rating has tumbled to one of the speculative categories. The price of the issue, of

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

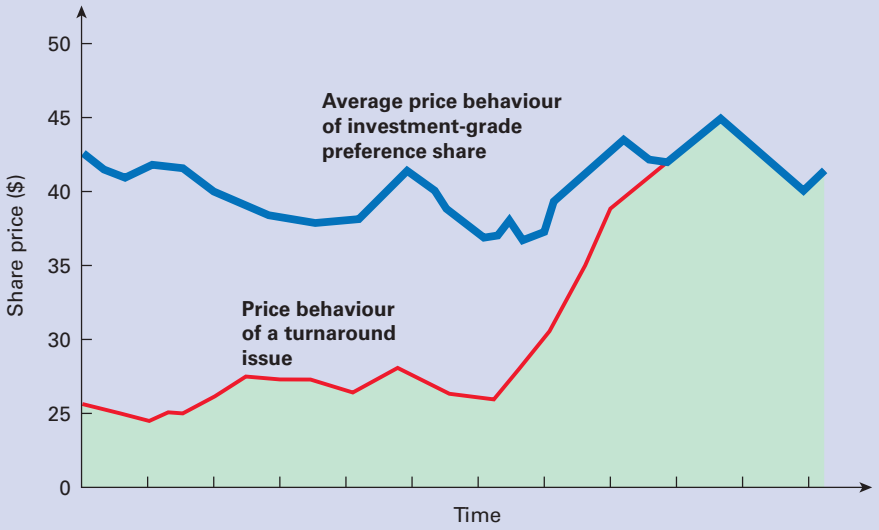
course, would be depressed to reflect the corporate problems of the issuer. There is more to this strategy, however, than simply finding a speculative-grade preference share. The difficult part is to uncover a speculative issue of which the fortunes, for one reason or another, *are about to undergo a substantial turnaround*. This strategy requires a good deal of fundamental analysis and is, in many respects, akin to investing in speculative ordinary shares.

In essence, the investor is betting that the firm will undergo a turnaround and will once again be able to service its preference dividend obligations in a prompt and timely fashion. Such a bet obviously involves a fair amount of risk. Unfortunately, although the rewards from this kind of high-risk investing can be substantial, they are somewhat limited. For example, if a turnaround candidate is expected to recover to a single A-rating, then its capital gains potential would likely be limited to the approximate price level of other A-rated preference shares. This condition is depicted in Figure 16.2. As the figure shows, although price performance may be somewhat limited, it is still substantial and can readily amount to holding period returns of 50% or more. But in view of the substantial risks involved, such returns are certainly not out of line.

FIGURE 16.2

Price Pattern of a Hypothetical Preference Share Turnaround Candidate

Although a turnaround issue seeks the price level of other preference shares of comparable quality and dividend payout, this level also acts as a type of price cap and clearly limits capital appreciation.



CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

16.5 Describe how high-grade preference shares are priced in the market. What role does dividend yield play in the valuation of preference shares? Could you use the zero-growth dividend valuation model to value a preference share? Explain.

16.6 Discuss why dividend yield is critical in evaluating the investment merits of high-grade preference shares during periods when market yields are expected to decline.

16.7 Identify several investment uses of preference shares. Would they be suitable for both conservative and aggressive investors? Explain.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

Summary

LG 1 Describe the basic features of preference shares, including sources of value and exposure to risk. Preference shares are hybrid securities that combine features of both debt and equity. Preference shares are considered senior to ordinary shares: they have a higher claim on the income and assets of the issuing company. Among other things, this means that preference dividends have to be paid before the company can pay dividends to its ordinary shareholders. As investment vehicles, preference shares provide attractive dividend yields. When interest rates decline, they can produce capital gains as well.

LG 2 Discuss the rights and claims of preference shareholders, and note some of the popular issue characteristics that are often found with these securities. Preference shares are considered less risky than ordinary shares because their shareholders enjoy a senior position with regard to dividend payments and asset claims. The most important feature of a preference share is its preferential claim on dividends. Investors should also be aware of several other preference share provisions, including the obligations of the issuer in case any dividends are missed (whether the share is cumulative or non-cumulative), whether it is callable, and whether it carries sinking-fund provisions.

LG 3 Understand the various measures of investment worth, and identify several investment strategies that can be used with preference shares. Except for convertible preference shares, the value of a preference share is generally linked to the dividend yield it provides to investors. Indeed, the price behaviour of a preference share is inversely related to market interest rates. The principal reason for holding preference shares is their yield. However, they can also be held for capital gains purposes by investors willing to trade on interest rates or on turnaround situations.

Key Terms

preference share, *p. 526*

adjustable-rate (floating rate) preference shares, *p. 529*
conversion feature, *p. 528*
cumulative provision, *p. 529*
in arrears, *p. 529*
non-cumulative provision, *p. 530*

book value (net asset value), *p. 531*
dividend yield, *p. 530*
fixed charge coverage, *p. 532*

Discussion Questions

LG 2 LG 3 **Q16.1** Briefly describe each of the following, and note how each differs from a conventional preference share.

a. Convertible preference share
b. Floating-rate preference share

As an investor, why would you choose a *convertible preference share* over a straight preference share? Why would you choose a *floating-rate one* over a *fixed-rate* one? Finally, instead of investing in a conventional preference share, why not just invest in an ordinary share?

LG 2 **Q16.2** Is it possible for a firm to pass (miss) dividends on preference shares, even if it earns enough to pay them? Explain. What usually happens when a company passes a dividend on a cumulative preference share? Are ordinary dividends affected in any way?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Problems

All problems are available on www.pearson.com.au/myfinancelab

LG3 **P16.1** An adjustable-rate preference share is currently selling at a dividend yield of 9%. Assume that the dividend rate on the share is adjusted once a year and that it is currently paying an annual dividend of $5.40 a share. Because of major changes that have occurred in the market, it's anticipated that annual dividends will drop to $4.50 a share on the next dividend adjustment date, which is just around the corner. What will the new dividend yield on this issue be if its market price does not change? What will the new market price on the issue be if the share's dividend yield holds at 9%? What will it be if the yield drops to 7%?

LG3 **P16.2** The Granger Company has 500 000 $2 preference shares outstanding. It generates an EBIT of $40 million and has annual interest payments of $2 million. Given this information, determine the fixed charge coverage of the preference shares. Given the company also has $5.5 million in depreciation and amortisation, use EBITDA to find the fixed charge coverage of preference shares.

LG3 **P16.3** You purchased 100 $2 preference shares one year and one day ago for $25 per share. You sold them today for $30 per share. Assuming you are in a 25% tax bracket, calculate your after-tax holding period return:

a. Assuming the dividends are treated as dividends for tax purposes
b. Assuming the dividends are treated as interest income for tax purposes

LG3 **P16.4** Using the resources available at your campus or public library, or on the Internet, identify a preference share and determine the following:

a. The share's latest market price
b. Its dividend yield
c. Its fixed charge coverage
d. Its book value per share
e. Its stated par value

Comment briefly on the issue's yield and the quality of its claim on income and assets.

LG1 **P16.5** CJ Co. has a preference share outstanding that pays annual dividends of $3.50 a share. At what price would this share be trading if market yields were 7.5%? Use one of the dividend valuation models (from Chapter 8) to price this share, assuming you have a 7.5% required rate of return. Are there any similarities between the two prices? Explain.

LG3 **P16.6** Charlene Weaver likes to speculate with preference shares by trading on movements in market interest rates. Right now, she believes the market is poised for a big drop in rates. Accordingly, she is thinking seriously about investing in a certain preference share that pays $7 in annual dividends and is currently trading at $75 a share. What rate of return will she realise on this investment if the market yield on the preference share drops to 6.5% within two years? What if the drop in rates takes place in one year?

LG3 **P16.7** Changes in international relations prove Charlene Weaver's expectations of a drop in market interest rates wrong (see Problem 16.6). She has purchased the $7 dividend preference shares for $75, but immediately market interest rates rise to 9%. What rate of return does she realise on this investment if she sells the preference shares immediately? What if she holds the shares for one year, with no further changes in rates?

Visit www.pearson.com.au/myfinancelab for web exercises, spreadsheets and other online resources.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 16.1 PENNI SHOWS A PREFERENCE FOR PREFERENCE SHARES

LG1 LG2 Kathleen 'Penni' Jock is a young career woman who has built up a substantial investment portfolio. Most of her holdings are preference shares—a situation she does not want to change. Penni is now considering the purchase of $4800 worth of LaRamie Mine's $5 preference shares, which are currently trading at $48 a share. Penni's stockbroker, Mr Michaels, has told her that he feels the market yield on preference shares like LaRamie should drop to 7% within the next three years and that these would make a sound investment. Instead of buying the LaRamie preference shares, Penni could choose an alternative investment (with comparable risk exposure) that she is confident can produce earnings of about 10% over each of the next three years.

QUESTIONS

1. If preference shares yields behave as Penni's stockbroker thinks they will, what will be the price of the LaRamie $5 preference shares in three years?
2. What return will this investment offer over the three-year holding period if all the expectations about it come true (particularly with regard to the price it is supposed to reach)? How much profit (in dollars) will Penni make from her investment?
3. Would you recommend that she buy the LaRamie preference shares? Why?
4. What are the investment merits of this transaction? What are its risks?

Excel with Spreadsheets

Preference shares are a unique type of equity and are referred to as a hybrid security—they have characteristics of both bonds and ordinary shares. In practice, preference shares are valued more like bonds, with market interest rates and investment quality playing major roles. For those investors interested in preference shares investing, it is likely that interest rates play a key role in their investment strategies. The two main strategies involve either seeking high levels of dividend income or taking advantage of falling market interest rates resulting in capital gains.

Create a spreadsheet to model and answer the following questions related to preference share investments.

Questions

1. The Bradman Corporation issued preference shares with a stated dividend of 8% of par. Preference shares of this type currently yields 7% with a par value of $75. Assume that the company has 800 000 preference shares outstanding at this time and that the dividends are paid annually. Reviewing its income statement, the EBIT is $85 million and it has annual interest payments of $3 million. The firm is in the 30% tax bracket.
   a. What is the value of Bradman's preference shares?
   b. What is the fixed charge coverage of Bradman's preference shares?

2. A group of speculators are interested in the Bradman preference shares as the current market interest rates are quite volatile. These speculators hope to gain from the potential movement in market rates. The group believes that the future course of rates will follow a downward trend, which should translate into an increase in their equity value.
   a. Given the information about Bradman preference shares and your valuation calculations from question **1**, what will be the realised holding period return on this investment if the market yield on the preference shares drops to 5% after one year?
   b. What will be the realised holding period return on this investment if the market yield on the preference shares rises to 8% after one year?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Preference shares offer unique blends of debt and equity investing in a single security. Their unique features make them attractive to many investors, but this uniqueness may also intimidate the average investor. The result is limited interest in these securities in spite of their attractive features. This limited appeal is reflected in the quantity and quality of Web sources that address these securities.

WEBSITE	URL
Australian Securities Exchange	www.asx.com.au

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

WEB CHAPTER

17

Real Estate and Other Tangible Investments

LEARNING GOALS

After studying this chapter, you should be able to:

- LG1 Describe how real estate investment objectives are set, how the features of real estate are analysed, and what determines real estate value.
- LG2 Discuss the valuation techniques commonly used to estimate the market value of real estate.
- LG3 Understand the procedures involved in performing real estate investment analysis.
- LG4 Demonstrate the framework used to value a prospective real estate investment, and evaluate results in light of the stated investment objectives.
- LG5 Describe the structure and investment appeal of real estate investment trusts.
- LG6 Understand the investment characteristics of tangibles such as gold and other precious metals, gemstones and collectibles, and review the suitability of investing in them.

While travelling through the downtown area of a major city, you see scores of people hurrying to work in high-rise office buildings. The business section of the city's paper includes an article about the low vacancy rates for office space, and you wonder if there might be an investment possibility at hand. Buying an office building is likely out of the question, but you can purchase shares in a company like Mirvac to meet your investment.

Mirvac is a real estate investment trust (REIT) and is listed on the ASX together with over 70 other REITs. The largest is Westfield. Other REITs include Lend Lease, Stockland and the Goodman Group. Most invest in commerical property (industrial offices, hotels, retail); some invest in residential property (units, estates, houses).

REITs typically offer investors some income in addition to their capital appreciation potential. A REIT is required to pass its taxable income through to its investors in order to meet federal taxation requirements.

REITs performed well in the period 1982–2007. For example, $100 invested in 1982 in REITs generated a $2680 return by 2007. The only asset class that did better over this period was Australian shares at $3504. However, in the period 2009–2010 returns fell dramatically, as reflected in the ASX 200 property trust index shown below. This fall reflected the financial crisis which was experienced worldwide. A return to normal economic conditions are expected to benefit investors again in the REIT sector.

As you will see in this chapter, real estate is an important part of a diversified investment portfolio, whether the investment is made through a REIT or through the direct purchase of property.

An investment in the S&P ASX 200 property trust sector 10 years ago would be worth 31% less today—even after receiving dividends—compared with a 45% gain in the broader market

(*Source: Australian Financial Review*, 13–14 March 2010, p. 22. Courtesy of *The Australian Financial Review*.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Investing in Real Estate

LG 1

real estate
entities such as residential homes, vacant land and income property.

tangibles
investment assets, other than real estate, that can be seen and touched.

What do warehouses, gold ingots and autographed cricket bats have in common? They are all investment vehicles chosen by investors who want to put their money in something that can be seen and felt. Real estate and other tangible investments, such as gold, gemstones and collectibles, offer attractive ways to diversify a portfolio. As noted in Chapter 1, **real estate** includes entities such as residential homes, vacant land and a variety of forms of income property, including warehouses, office and apartment buildings and units. **Tangibles** are investment assets, other than real estate, that can be seen or touched. Ownership of real estate and tangibles differs from ownership of security investments in one primary way: it involves an asset you can see or touch rather than a security that evidences a financial claim. Particularly appealing are the favourable risk–return tradeoffs resulting from the uniqueness of real estate and other tangible assets and the relatively inefficient markets in which they are traded. In addition, certain types of real estate investments offer attractive tax benefits that may enhance their returns. In this chapter we first consider the important aspects of real estate investment and then cover the other classes of tangible assets.

In addition to the fact that real estate is a tangible asset, it differs from security investments in yet another way: managerial decisions about real estate greatly affect the returns earned from investing in it. In real estate, you must answer unique questions: What rents should be charged? How much should be spent on maintenance and repairs? What purchase, lease or sales contract provisions should be used to transfer certain rights to the property? Along with market forces, answers to such questions determine whether you will earn the desired return on a real estate investment.

Like other investment markets, the real estate market changes over time. For example, the national real estate market was generally strong through most of the 1980s and 1990s. The strong market during this period was driven by generally prosperous economic times, including high economic growth. These years were also a time of relatively high inflation, another factor in the pricing of real estate. Finally, increased demand by large numbers of foreign investors, particularly from Asia, for commercial and residential real estate helped fuel the rising market.

In the period 2000–2007 both residential and commercial property values grew. Demand growth and depleted inventory underpinned capital appreciation. While commercial property was adversely affected by the financial crisis over the 2008–2010 period, the shortage of residential property in capital cities kept residential values there strong. Today, real estate values in many areas of the country are steadily rising as a result of the growing demand occasioned by economic growth, low interest rates and a depleted inventory of available properties. For today's real estate investors, the lessons are clear: macro issues such as the economic outlook, interest rate levels, the demand for new space, government urban policy, the current supply of space and regional considerations are of major importance.

As recent history demonstrates, investing in real estate means more than just 'buying right' or 'selling right'. It also means choosing the right properties for your investment needs and managing them well. Here we begin by considering investor objectives, analysis of important features and determinants of real estate value.

Investor Objectives

Setting objectives involves two steps. First, you should consider differences in the investment characteristics of real estate. Second, you should establish investment constraints and goals.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Investment Characteristics Individual real estate investments differ in their characteristics even more than individual people differ in theirs. Just as you wouldn't marry without thinking long and hard about the type of person you'd be happy with, you shouldn't select an investment property without analysing whether it is the right one for you. To select wisely, you need to consider the available types of properties and whether you want an equity or a debt position.

In this chapter we discuss real estate investment primarily from the standpoint of equity. Individuals can also invest in instruments of real estate debt, such as mortgages and deeds of trust. Usually, these instruments provide a fairly safe rate of return if the borrowers are required to maintain at least a 20% equity position in the mortgaged property (no more than an 80% loan-to-value ratio). This equity position gives the real estate lender a margin of safety.

income property
leased-out residential or commerical real estate that is expected to provide returns primarily from periodic rental income.

speculative property
vacant land and real estate investment properties that are expected to provide returns primarily from appreciation in value.

We can classify real estate into two investment categories: income properties and speculative properties. **Income property** includes residential and commercial properties that are leased out and expected to provide returns primarily from periodic rental income. *Residential properties* include single-family properties (houses, units, cooperatives and townhouses) and multi-family properties (apartment complexes and buildings). *Commercial properties* include office buildings, shopping centres, warehouses and factories. **Speculative property** typically includes vacant land and investment properties that are expected to provide returns primarily from appreciation in value due to location, scarcity and so forth, rather than from periodic rental income.

Income properties are subject to a number of sources of risk and return. Losses can result from tenant carelessness, an excessive supply of competing rental units or poor management. On the profit side, however, income properties can provide increasing rental incomes, appreciation in the value of the property, and possibly even some shelter from taxes.

Speculative properties, as the name implies, give their owners a chance to reap significant financial rewards but carry also the risk of heavy loss. For instance, rumours may start that a new multimillion-dollar factory is going to be built on the edge of town. Land buyers would jump into the market, and prices soon would be bid up. The right buy–sell timing could yield returns of several hundred per cent or more. But people who bought into the market late or those who failed to sell before the market turned might lose the major part of their investment. Before investing in real estate, you should determine the risks that various types of properties present and then decide which risks you will accept and can afford.

Constraints and Goals When setting your real estate investment objectives, you also need to set both financial and non-financial constraints and goals. One financial constraint is the risk–return relationship you find acceptable. In addition, you must consider how much money you want to allocate to the real estate portion of your portfolio, and you should define a quantifiable financial objective. Often this financial goal is stated in terms of *discounted cash flow* (also referred to as *net present value*) or *yield*. Later in this chapter we will show how various constraints and goals can be applied to real estate investing.

Although you probably will want to invest in real estate for its financial rewards, you also need to consider how your technical skills, temperament, repair skills and managerial talents fit a potential investment. Do you want a prestigious, trouble-free property? Or would you prefer a fix-up special on which you can release your imagination and workmanship? Would you enjoy living in the same building as your tenants, or would you prefer as little contact with them as possible? Just as you wouldn't choose a career just for the money, neither should you buy a property solely on that basis.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Analysis of Important Features

The analytical framework suggested in this chapter can guide you in estimating a property's investment potential. There are four important general features related to real estate investment.

1. *Physical property*. When buying real estate, make sure you are getting both the quantity and the quality of property you think you are. Problems can arise if you fail to obtain a site survey, an accurate square-metre measurement of the buildings, or an inspection for building or site defects. When signing a contract to buy a property, make sure it accurately identifies the real estate and lists all items of personal property (such as curtains) that you expect to receive.
2. *Property rights*. Strange as it may seem, what you buy when you buy real estate is a bundle of legal rights that fall under concepts in law such as deeds, titles, easements, liens and encumbrances. When investing in real estate, make sure that along with various physical inspections, you get a legal inspection from a qualified professional. Real estate sale and lease agreements should not be the work of amateurs.
3. *Time horizon*. Like a roller coaster, real estate prices go up and down. Sometimes market forces pull them up slowly but surely; in other periods, prices can fall so fast that they take an investor's breath away. Before judging whether a prospective real estate investment will appreciate or depreciate, you must decide what time period is relevant. The short-term investor might count on a quick drop in mortgage interest rates and buoyant market expectations, whereas the long-term investor might look more closely at population growth potential.
4. *Geographic area*. Real estate is a spatial commodity, which means that its value is directly linked to what is going on around it. For some properties, the area of greatest concern consists of a few blocks; for others, an area of hundreds of square kilometres serves as the relevant market area. You must decide what spatial boundaries are important for your investment before you can productively analyse real estate demand and supply.

Determinants of Value

In the analysis of a real estate investment, value generally serves as the central concept. Will a property increase in value? Will it produce increasing amounts of cash flows? To address these questions, you need to evaluate four major determinants: demand, supply, the property and the property transfer process.

demand
in real estate, people's desire to buy or rent a given property.

demographics
measurable characteristics of an area's population, such as household size, age structure, occupation, gender and marital status.

psychographics
characteristics that describe people's mental dispositions, such as personality, lifestyle and self-concept.

Demand In the valuing of real estate, **demand** refers to people's desire to buy or rent a given property. In part, demand stems from a market area's economic base. In most real estate markets, the source of buying power comes from jobs. Property values follow an upward path when employment is increasing, and values typically fall when employers begin to lay off workers. Therefore, these are the first questions you should ask about demand: What is the outlook for jobs in the relevant market area? Are schools, colleges, and universities gaining enrolment? Are major companies planning expansion? Are wholesalers, retailers and financial institutions increasing their sales and services? Upward trends in these indicators often signal a rising demand for real estate.

Population characteristics also influence demand. To analyse demand for a specific property, you should look at an area's population demographics and psychographics. **Demographics** refers to measurable characteristics, such as household size, age structure, occupation, gender and marital status. **Psychographics** includes characteristics

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

that describe people's mental dispositions, such as personality, lifestyle and self-concept. By comparing demographic and psychographic trends to the features of a property, you can judge whether it is likely to gain or lose favour among potential buyers or tenants. For example, if an area's population is made up of a large number of sports-minded, highly social 25- to 35-year-old singles, the presence of nearby or on-site health club facilities may be important to a property's success.

Mortgage financing is also a key factor. Tight money can choke off the demand for real estate just as easy money can create an excess supply. As investors experience, very high interest rates and the unavailability of mortgages cause inventories of unsold properites to grow and real estate prices to fall. Conversely, as mortgage interest rates fall, real estate sales and refinancing activity expand. Australia's real estate market waxed and waned in the 1980s and 1990s. Commercial investment fell away during the market crash in 1987 and again in the early 2000s. Urban residential property values have, overall, moved up during this period, although value growth has slowed when interest rates rose. Real estate markets remained robust until early 2007, when a hesitant economy put some brakes on building and real estate values. Urban construction began to recover in 2009/10 through government incentives and provisions.

supply
in real estate, the potential competitors available in the market.

Supply Analysing **supply** means sizing up the competition. Nobody wants to pay you more for a property than the price he or she can pay your competitor; nor when you're buying (or renting) should you pay more than the prices asked for other, similar properties. As a result, you should identify sources of potential competition and inventory them by price and features. In general, people in real estate think of competitors in terms of similar properties. If you are trying to sell a house, for example, your competition is other, similar houses for sale in the same area.

principle of substitution
the principle that people don't buy or rent real estate *per se* but, instead, judge properties as different sets of benefits and costs.

For longer term investment decisions, however, you should expand your concept of supply and identify competitors through the **principle of substitution**. This principle holds that people do not buy or rent real estate *per se* but, instead, judge properties as different sets of benefits and costs. Properties fill people's needs, and it is these needs that create demand. Thus, potential competitors are not just geographically and physically similar properties. In some markets, for example, low-priced single-family houses might compete with units, manufactured homes ('mobile homes') and even rental apartments. Before investing in any property, you should decide what market that property appeals to and then define its competitors as other properties that its buyers or tenants might also typically choose. After identifying all relevant competitors, look for the relative pros and cons of each property in terms of features and respective prices.

INVESTOR FACTS

IT EVEN HAS A KITCHEN—Here's the new use for some types of investment real estate—housing for business travellers. As shortages of hotel rooms in large cities drive up the costs of business travel, new Bureaus of Accommodation have an alternative: they lease scattered-site, furnished apartments from property managers and rent them out nightly, weekly or monthly. The clientele is mostly business travellers sent out of town on temporary assignments or those being relocated, although there is also a growing leisure travel market for the properties. This is a novel way to apply the principles of supply and demand in the real estate market.

The Property We've seen that a property's value is influenced by demand and supply. The price people will pay is governed by their needs and the relative prices of the properties available to meet those needs. Yet in real estate, the property itself is also a key ingredient. To try to develop a property's competitive edge, an investor should consider five items: (1) restrictions on use, (2) location, (3) site, (4) improvements, and (5) property management.

Restrictions on Use In today's highly regulated society, both state and local laws and private contracts limit the rights of all property owners. Government restrictions derive from zoning laws, building and occupancy codes, and health and sanitation requirements. Private restrictions include deeds, leases, bylaws and operating rules. You should not

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

invest in a property until you or your lawyer determine that what you want to do with the property fits within applicable laws, rules and contract provisions.

Location You may have heard the adage 'The three most important factors in real estate value are location, location and location.' Of course, location is not the only factor that affects value, yet a good location unquestionably increases a property's investment potential. With that said, how can you tell a bad location from a good one? A good location rates high on two key dimensions: convenience and environment.

convenience
in real estate, the accessibility of a property to the places the people in a target market frequently need to go.

Convenience refers to how accessible a property is to the places to which the people in a target market frequently need to go. Any residential or commercial market segment has a set of preferred places its tenants or buyers will want to be close to. Another element of convenience is transportation facilities. Proximity to highways, buses and commuter trains is of concern to both tenants and buyers of commercial and residential property. Commercial properties need to be readily accessible to their customers, and the customers also value such accessibility.

environment
in real estate, the natural as well as aesthetic, socioeconomic, legal and fiscal surroundings of a property.

In the analysis of real estate, the term **environment** has broader meaning than trees, rivers, lakes and air quality. When you invest in real estate, even more important than its natural surroundings are its aesthetic, socioeconomic, legal and fiscal surroundings. Neighbourhoods with an *aesthetic environment* are those where buildings and landscaping are well executed and well maintained. Intrusion of noise, sight and air pollution is minimal, and encroaching unharmonious land uses are not evident. The *socioeconomic environment* consists of the demographics and lifestyles of the people who live or work in nearby properties. The *legal environment* relates to the restrictions on use that apply to nearby properties. And last, you need to consider a property's *fiscal environment*: the amount of rates and taxes you will be required to pay and the government services you will be entitled to receive (parks, water, sewer, waste collection, libraries). Rates are a two-sided coin. On the one hand, they impose a cost, but on the other, they provide services that may be of substantial benefit.

INVESTOR FACTS

ENVIRONMENTAL THREATS— Investors in vineyards and horse studs in the Hunter Valley in NSW face many risks, including diseases, market downturns and climate adversities. Now they face new threats from coal mining, which is proposing to expand in the valley. Investors claim they face financial ruin, since mining will adversely impact on air quality, water-table levels, transport and agricultural amenities and conditions. These investors considered the valley an ideal location, but now face developments which significantly raise the risk levels of their investments.

Site One of the most important features of a property site is its size. For residential properties, some people want a large yard for a garden or for children to play in; others may prefer no yard at all. For commercial properties, such as office buildings and shopping centres, adequate parking space is necessary. Also, with respect to site size, if you are planning a later addition of space, make sure the site can accommodate it, both physically and legally. Site quality as reflected in soil fertility, topography, elevation and drainage is also important. For example, sites with relatively low elevation may be subject to flooding.

Improvements In real estate, the term **improvements** refers to the additions to a site, such as buildings, footpaths and various on-site amenities. Typically, building size is measured and expressed in terms of square metres. Because square metres is so important in building and unit comparison, you should get accurate measures on any properties you consider investing in.

improvements
in real estate, the additions to a site, such as buildings, footpaths and various on-site amenities.

Another measure of building size is room count and floor plan. For example, a well-designed 125 square-metre apartment unit might in fact be more liveable, and therefore easier to rent even at a higher price, than a poorly designed one of 175 square metres. You should make sure that floor plans are logical; that traffic flows through a building will pose no inconveniences; that there is sufficient closet, cabinet and other storage space; and that the right mix of rooms exists. For example, in an office building you should not have to cross through other offices to get to the building's only

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

restroom facilities, and small merchants in a shopping centre should be located where they receive the pedestrian traffic generated by the larger (anchor) tenants.

Attention should also be given to amenities, style and construction quality. Amenities such as air conditioning, swimming pools, handicap accessibility and elevators can significantly affect the value of investment property. In addition, the architectural style and quality of construction materials and workmanship are important factors influencing property value.

Property Management In recent years, real estate owners and investors have increasingly recognised that investment properties (apartments, office buildings, shopping centres and the like) do not earn maximum cash flows by themselves. They need to be guided towards that objective, and skilled property management can help. Without effective property management, no real estate investment can produce maximum benefits for its users and owners.

Today, property management requires that you or a hired manager run the entire operation as well as perform day-to-day chores. The property manager will segment buyers, improve a property's site and structure, keep tabs on competitors and develop a marketing campaign. The property manager also assumes responsibility for the maintenance and repair of buildings and their physical systems (electrical, heating, air conditioning and plumbing) and for the keeping of revenue and expense records. In addition, property managers decide the best ways to protect properties against loss from perils such as fire, flood, theft, storms and negligence. In its broadest sense, **property management** means finding the optimal level of benefits for a property and providing them at the lowest costs. Of course, for speculative investments such as raw land, the managerial task is not so pronounced and the manager has less control over the profit picture.

property management
in real estate, finding the optimal level of benefits for a property and providing them at the lowest costs.

Property Transfer Process In Chapter 9 we introduced the concept of an *efficient market*, in which information flows so quickly among buyers and sellers that it is virtually impossible for an investor to outperform the average systematically. As soon as something good (an exciting new product) or something bad (a multimillion-dollar product liability suit) occurs, the price of the affected company's share adjusts to reflect its current potential for earnings or losses. Some people accept the premise that securities markets are efficient; others do not. But one thing is sure: most knowledgeable real estate investors know that real estate markets are less efficient than capital markets. What this means is that skillfully conducted real estate analysis can help you beat the averages.

Real estate markets differ from securities markets in that no comprehensive system exists for complete information exchange among buyers and sellers and among tenants and lessors. There is no central marketplace, like the ASX, where transactions are conveniently made by equally well-informed investors who share similar objectives. Some efficiency, however, is achieved by the presence of accessible electronic databases where property transaction data is recorded promptly, especially in capital city urban residential property. Instead, real estate is traded in generally *illiquid markets* that are regional or local in nature and where transactions are made to achieve investors' often unique investment objectives.

property transfer process
the process of promotion and negotiation of real estate, which can significantly influence the cash flows a property will earn.

In the **property transfer process** itself, the inefficiency of the market means that how you collect and disseminate information affects your results. The cash flows that a property earns can be influenced significantly through promotion and negotiation. *Promotion* is the task of getting information about a property to its buyer segment. You can't sell or rent a property quickly or for top dollar unless you can reach the people you want to reach in a cost-effective way. Among the major ways to promote a property are advertising, publicity, sales gimmicks and personal selling. *Negotiation* of

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

price is just as important. Seldom does the minimum price that a seller is willing to accept just equal the maximum price a buyer is willing to pay; often some overlap occurs. In real estate, the asking price for a property may be anywhere from 5% to 60% *above* the price that a seller (or lessor) will actually accept. Therefore, the negotiating skills of each party determine the final transaction price.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

17.1 Define and differentiate between *real estate* and other *tangibles*. Give examples of each of these forms of investment.

17.2 How does real estate investment differ from securities investment? Why might adding real estate to your investment portfolio decrease your overall risk? Explain.

17.3 Define and differentiate between *income property* and *speculative property*. Differentiate between and give examples of residential and commercial income properties.

17.4 Briefly describe the following important features to consider when making a real estate investment.

a. Physical property
b. Property rights
c. Time horizon
d. Geographic area

17.5 What role does demand and supply play in determining the value of real estate? What are *demographics* and *psychographics*, and how are they related to demand? How does the *principle of substitution* affect the analysis of supply?

17.6 How do restrictions on use, location, site, improvements and property management affect a property's competitive edge?

17.7 Are real estate markets efficient? Why or why not? How does the efficiency or inefficiency of these markets affect both promotion and negotiation as parts of the property transfer process?

Real Estate Valuation

LG2 LG3

market value
in real estate, the actual worth of a property; it indicates the price at which the property would sell under current market conditions.

In real estate, **market value** is a property's actual worth, which indicates the price at which it would sell under current market conditions. This concept is interpreted differently from its meaning in shares and bonds. The difference arises for a number of reasons: (1) each property is unique, (2) terms and conditions of a sale may vary widely, (3) market information is imperfect, (4) properties may need substantial time for market exposure, time that may not be available to any given seller, and (5) buyers, too, sometimes need to act quickly. All these factors mean that no one can tell for sure what a property's 'true' market value is. As a result, many properties sell for prices significantly above or below their estimated market values. To offset such inequities, many real estate investors forecast investment returns to evaluate potential property investments. Here we look first at procedures for estimating the market value of a piece of real estate and then consider the role and procedures used to perform investment analysis.

Estimating Market Value

valuation
in real estate, the process for estimating the current market value of a piece of property.

In real estate, estimating the current market value of a piece of property is done through a process known as a real estate **valuation**. Using certain techniques, a valuer determines what he or she feels is the current market value of the property. Even so, you should interpret the appraised market value a little sceptically. Because of both technical and informational shortcomings, this estimate is subject to substantial error.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Although you can arrive at the market values of frequently traded shares simply by looking at current quotes, in real estate, valuers and investors typically must use three complex, and imperfect, techniques and then correlate the results to come up with one best estimate. These three approaches to real estate market value are (1) the cost approach, (2) the comparative sales approach, and (3) the income approach.

cost approach
a real estate valuation approach based on the idea that an investor shouldn't pay more for a property than it would cost to rebuild it at today's prices.

The Cost Approach The **cost approach** is based on the idea that an investor should not pay more for a property than it would cost to rebuild it at today's prices for land, labour and construction materials. This approach to estimating value generally works well for new or relatively new buildings. The cost approach is more difficult to apply to older properties, however. To value older properties, you would have to subtract from the replacement cost estimates some amount for physical and functional depreciation. Most experts agree that the cost approach is a good method to use as a check against a price estimate, but rarely should it be used exclusively.

comparative sales approach
a real estate valuation approach that uses as the basic input the sales prices of properties that are similar to the subject property.

The Comparative Sales Approach The **comparative sales approach** uses as the basic input the sales prices of properties that are similar to the subject property. This method is based on the idea that the value of a given property is about the same as the prices for which other, similar properties have recently sold. Of course, the catch here is that all properties are unique in some respect. Therefore, the price that a subject property could be expected to bring must be adjusted upwards or downwards to reflect its superiority or inferiority to comparable properties. In addition, the sales prices of comparable homes may not indicate whether or not the sale was a 'distress sale' in which the asking price was lowered by the owner in order to hurry the sale along.

Nevertheless, because the comparable sales approach is based on selling prices, not asking prices, it can give a good feel for the market. As a practical matter, if you can find at least one sold property slightly better than the one you're looking at, and one slightly worse, their recent sales prices can serve to bracket an estimated market value for the property you have your eye on.

income approach
a real estate valuation approach that calculates a property's value as the present value of all its future income.

net operating income (NOI)
the amount left after subtracting vacancy and collection losses and property operating expenses from an income property's gross potential rental income.

The Income Approach Under the **income approach**, a property's value is viewed as the present value of all its future income. The most popular income approach is called direct capitalisation. This approach is represented by the formula in Equation 17.1. It is similar in logic and form to the zero-growth dividend valuation model presented in Chapter 8 for shares (see Equation 8.7 on page 261).

Equation 17.1

$$\text{Market value} = \frac{\text{Annual net operating income}}{\text{Market capitalisation rate}}$$

Equation 17.1a

$$V = \frac{NOI}{R}$$

Annual **net operating income** (**NOI**) is calculated by subtracting vacancy and collection losses and property operating expenses, including property insurance and property taxes, from an income property's gross potential rental income. An estimated **market capitalisation rate** is obtained by looking at recent market sales figures to determine the rate of return currently required by investors. Technically, the market capitalisation rate means the rate used to convert an income stream to a present value. By dividing

market capitalisation rate
the rate used to convert an income stream to a present value; used to estimate the value of real estate under the income approach.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

the annual net operating income by the appropriate market capitalisation rate, you get an income property's estimated market value. An example of the application of the income approach is shown in Table 17.1.

Using an Expert Real estate valuation is a complex and technical procedure. It requires reliable information about the features of comparable properties, their selling prices, and terms of financing. It also involves some subjective judgments, as is the case in the example in Table 17.1. Rather than relying exclusively on their own judgment, many investors hire a real estate agent or a professional real estate valuer to advise them about the market value of a property. As a form of insurance against overpaying, the use of an expert can be well worth the cost and is often required by the lender.

Performing Investment Analysis

investment analysis
an approach to real estate valuation that not only considers what similar properties have sold for, but also looks at the underlying determinants of value.

Estimates of market value play an integral role in real estate decision making. Yet today, more and more investors supplement their market value appraisals with **investment analysis**. This form of real estate valuation not only considers what similar properties have sold for but also looks at the underlying determinants of value. It is an extension of the traditional valuation approaches (cost, comparative sales and income) that gives investors a better picture of whether a selected property is likely to satisfy their investment objectives.

Market Value versus Investment Analysis The concept of market value differs from investment analysis in four important ways: (1) retrospective versus prospective, (2) impersonal versus personal, (3) unleveraged versus leveraged, and (4) net operating income (NOI) versus after-tax cash flows.

TABLE 17.1 Applying the Income Approach

Comparable Property	(1) NOI	(2) Sale Price	(3) (1) ÷ (2) Market Capitalisation Rate (*R*)
2301 Maple Avenue	$16 250	$182 500	0.0890
4037 Armstrong Street	15 400	167 600	0.0919
8240 Ludwell Street	19 200	198 430	0.0968
7392 Grant Boulevard	17 930	189 750	0.0945
Subject property	$18 480	?	?

From this market-derived information, a valuer would work through Equation 17.1a to determine the subject property's value as follows:

$$V = \frac{NOI}{R}$$

$$V = \frac{\$18\,480}{R}$$

$$V = \frac{\$18\,480}{0.093^*}$$

$$V = \underline{\underline{\$198\,710}}$$

*Based on an analysis of the relative similarities of the comparables and the subject property, the valuer decided that the appropriate *R* equals 0.093.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Retrospective versus Prospective Market value appraisals look backwards; they attempt to estimate the price that a property will sell for by comparing recent sales of similar properties. Under static market conditions, such a technique can be reasonable. But if, say, interest rates, population or buyer expectations are changing rapidly, past sales prices may not accurately indicate a property's current value or its future value. An investment analysis tries to incorporate in the valuation process such factors as economic base, population demographics and psychographics, cost of mortgage financing and potential sources of competition.

Impersonal versus Personal A market value estimate represents the price that a property will sell for under certain specified conditions—in other words, a sort of market average. But in fact, every buyer and seller has a unique set of needs, and each real estate transaction can be structured to meet those needs. Thus, an investment analysis looks beyond what may constitute a 'typical' transaction and attempts to evaluate a subject property's terms and conditions of sale (or rent) as they correspond to a given investor's constraints and goals.

For example, a market value appraisal might show that with normal financing and conditions of sale, a property is worth $180 000. Yet because of personal tax consequences, it might be better for a seller to ask a higher price for the property and offer owner financing at a below-market interest rate.

Unleveraged versus Leveraged The returns that a real estate investment offers will be influenced by the amount of the purchase price that is financed with debt. But simple income capitalisation ($V = NOI \div R$) does not incorporate alternative financing plans that might be available. It assumes either a cash or an unleveraged purchase.

leverage
in real estate, the use of debt financing to purchase a piece of property and thereby affect its risk–return parameters.

The use of debt financing, or **leverage**, gives differing risk–return parameters to a real estate investment. Leverage automatically increases investment risk because borrowed funds must be repaid. Failure to repay a mortgage loan results in foreclosure and possible property loss. Alternatively, leverage may also increase return. If a property can earn a return in excess of the cost of the borrowed funds (i.e. debt cost), the investor's return is increased to a level well above what could have been earned from an all-cash deal. This is known as **positive leverage**. Conversely, if the return is below the debt cost, the return on invested equity is less than from an all-cash deal. This is called **negative leverage.** The following example both shows how leverage affects return and provides insight into the possible associated risks.

positive leverage
a position in which, if a property's return is in excess of its debt cost, the investor's return is increased to a level well above what could have been earned from an all-cash deal.

negative leverage
a position in which, if a property's return is below its debt cost, the investor's return is less than from an all-cash deal.

Assume you purchase a parcel of land for $20 000. You have two financing choices. Choice A is all cash; that is, no leverage is employed. Choice B involves 80% financing (20% downpayment) at 12% interest. With leverage (choice B), you sign a $16 000 note (0.80 of $20 000) at 12% interest, with the entire principal balance due and payable at the end of one year. Now suppose the land appreciates during the year to $25 000. (A comparative analysis of this occurrence is presented in Table 17.2.) Had you chosen the all-cash deal, the one-year return on your initial equity would have been 25%. The use of leverage magnifies that return, no matter how much the property appreciated. The leveraged alternative (choice B) involved only a $4000 investment in personal initial equity, with the balance financed by borrowing at 12% interest. The property sells for $25 000, of which $4000 represents recovery of the initial equity investment, $16 000 goes to repay the principal balance on the debt, and another $1920 of gain is used to pay interest ($16 000 × 0.12). The balance of the proceeds, $3080, represents your return. The return on your initial equity is 77%—over three times that provided by the no-leverage alternative, choice A.

We used 12% in this example, but the cost of money has surprisingly little effect on comparative (leveraged versus unleveraged) returns. For example, using 6%

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 17.2 The Effect of Positive Leverage on Return: An Example*

Purchase price: $20 000
Sale price: $25 000
Holding period: 1 year

Item Number	Item	Choice A No Leverage	Choice B 80% Financing
1	Initial equity	$20 000	$4 000
2	Loan principal	0	16 000
3	Sale price	25 000	25 000
4	Capital gain [(3) − (1) − (2)]	5 000	5 000
5	Interest cost [0.12 × (2)]	0	1 920
6	Net return [(4) − (5)]	$ 5 000	$3 080
	Return on investor's equity [(6) ÷ (1)]	$ 5 000 / $20 000 = 25%	$3 080 / $4 000 = 77%

*To simplify this example, all values are presented on a *before-tax* basis. To get the true return, one would consider taxes on the capital gain and the interest expense.

interest, the return on equity rises to 101%, even greater than the unleveraged alternative. Granted, using a lower interest cost does improve return but, other things being equal, what really drives return on equity is the amount of leverage.

There is another side to the coin, however. No matter what the eventual outcome, risk is always inherent in leverage; it can easily turn a bad deal into a disaster. Suppose the $20 000 property discussed above dropped in value by 25% during the one-year holding period. The comparative results are presented in Table 17.3. The unleveraged investment would have resulted in a negative return of 25%. This is not large, however, compared to the leveraged position, in which you would lose not only the entire initial investment of $4000 but an additional $2920 ($1000 additional principal on the debt + $1920 interest). The total loss of $6920 on the original $4000 of equity results in a (negative) return of 173%. Thus, the loss in the leverage case is nearly seven times the loss experienced in the unleveraged situation.

TABLE 17.3 The Effect of Negative Leverage on Return: An Example*

Purchase price: $20 000
Sale price: $15 000
Holding period: 1 year

Item Number	Item	Choice A No Leverage	Choice B 80% Financing
1	Initial equity	$20 000	$ 4 000
2	Loan principal	0	16 000
3	Sale price	15 000	15 000
4	Capital loss [(3) − (1) − (2)]	5 000	5 000
5	Interest cost [0.12 × (2)]	0	1 920
6	Net loss [(4) − (5)]	$ 5 000	$6 920
	Return on investor's equity [(6) ÷ (1)]	$ 5 000 / $20 000 = −25%	$6 920 / $4 000 = −173%

*To simplify this example, all values are presented on a *before-tax* basis. To get the true return, one would consider taxes on the capital loss and the interest expense.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

NOI versus After-Tax Cash Flows Recall that to estimate market value, the income approach capitalises net operating income (NOI). To most investors, though, the NOI figure holds little meaning. This is because the majority of real estate investors finance their purchases. In addition, few investors today can ignore the effect of income tax law on their investment decisions. Investors want to know how much cash they will be required to put into a transaction and how much cash they are likely to get out. The concept of NOI does not address these questions. Thus, we instead use **after-tax cash flows** (**ATCFs**), which are the annual cash flows earned on a real estate investment, net of all expenses, debt payments and taxes. To these we apply the familiar finance measure of investment return—discounted cash flow—as a prime criterion for selecting real estate investments. (Sometimes yield is used instead to assess the suitability of a prospective real estate investment.)

after-tax cash flows (ATCFs)
the annual cash flows earned on a real estate investment, net of all expenses, debt payments and taxes.

discounted cash flow
the use of present-value techniques to find net present value (NPV).

net present value (NPV)
the difference between the present value of the cash flows and the amount of equity necessary to make an investment.

Calculating Discounted Cash Flow Calculating **discounted cash flow** involves the use of the present-value techniques we discussed in Chapter 4, Appendix 4A; in addition, you need to learn how to calculate annual after-tax cash flows and the after-tax net proceeds of sale. You then can discount the cash flows that an investment is expected to earn over a specified holding period. This figure in turn gives you the present value of the cash flows. Next, you find the **net present value** (**NPV**)—the difference between the present value of the cash flows and the amount of equity necessary to make the investment. The resulting difference tells you whether the proposed investment looks good (a positive net present value) or bad (a negative net present value).

This process of discounting cash flows to calculate the net present value (NPV) of an investment can be represented by the following equation:

Equation 17.2

$$NPV = \left[\frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \cdots + \frac{CF_{n-1}}{(1+r)^{n-1}} + \frac{CF_n + CF_{R_n}}{(1+r)^n}\right] - I_0$$

where:

I_0 = the original required investment
CF_i = annual after-tax cash flow for year i
CF_{R_n} = the after-tax net proceeds from sale (reversionary after-tax cash flow) occurring in year n
r = the discount rate and $[1 \div (1+r)^i]$ is the present-value interest factor for \$1 received in year i using an r per cent discount rate

In this equation, the annual after-tax cash flows, CF, may be either inflows to investors or outflows from them. Inflows are preceded by a plus (+) sign, outflows by a minus (−) sign.

Calculating Yield An alternative way to assess investment suitability is to calculate the *yield*, which was first presented in Chapter 4. It is the discount rate that causes the present value of the cash flows just to equal the amount of equity, or, alternatively, it is the discount rate that causes net present value (NPV) just to equal \$0. Setting the NPV in Equation 17.2 equal to zero, we can rewrite the equation as follows:

Equation 17.3

$$\left[\frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \cdots + \frac{CF_{n-1}}{(1+r)^{n-1}} + \frac{CF_n + CF_{R_n}}{(1+r)^n}\right] = I_0$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Because estimates of the cash flows (CF_i), including the sale proceeds (CF_{R_n}), and the equity investment (I_0) are known, the yield is the unknown discount rate (r) that solves Equation 17.3. It represents the compounded annual rate of return actually earned by the investment.

Unfortunately, the yield is often difficult to calculate without the use of the sophisticated routine found on most financial business calculators or, alternatively, the use of a properly programmed personal computer. For our purposes, we will use the following three-step procedure to estimate yield to the nearest whole per cent (1%).

Step 1: Calculate the investment's net present value (NPV) using its required return.

Step 2: *If the NPV found in step 1 is positive (>$0)*, raise the discount rate (typically 1% to 5%) and recalculate the NPV using the increased rate.

If the NPV found in step 1 is negative (<$0), lower the discount rate (typically 1% to 5%) and recalculate the NPV using the decreased rate.

Step 3: *If the NPV found in step 2 is very close to $0*, the resulting discount rate is a good estimate of the investment's yield to the nearest whole per cent.

If the NPV is still not close to $0, repeat step 2.

If the calculated yield is greater than the discount rate appropriate for the given investment, the investment is acceptable. In that case, the net present value would be positive.

When consistently applied, the net present value and yield approaches give the same recommendation for accepting or rejecting a proposed real estate investment. The next section shows how all the elements discussed so far in this chapter can be applied to a real estate investment decision.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

17.8 What is the *market value* of a property? What is real estate *appraisal*? Comment on the following statement: 'Market value is always the price at which a property sells'.

17.9 Briefly describe each of the following approaches to real estate market value:

a. Cost approach

b. Comparative sales approach

c. Income approach

17.10 What is real estate *investment analysis*? How does it differ from the concept of market value?

17.11 What is *leverage,* and what role does it play in real estate investment? How does it affect the risk–return parameters of a real estate investment?

17.12 What is *net operating income (NOI)*? What are *after-tax cash flows (ATCFs)*? Why do real estate investors prefer to use ATCFs?

17.13 What is the *net present value (NPV)*? What is the *yield*? How are the NPV and yield used to make real estate investment decisions?

An Example of Real Estate Valuation

LG 4

Assume that Jack Wilson is deciding whether to buy the Academic Arms Apartments. To improve his real estate investment decision making, Jack follows a systematic procedure. He designs a schematic framework of analysis that corresponds closely to the

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

topics we've discussed. Following this framework (shown in Figure 17.1), Jack follows a five-step procedure. He (1) sets his investor objectives, (2) analyses important features of the property, (3) collects data on the determinants of the property's value, (4) performs valuation and investment analysis, and (5) synthesises and interprets the results of his analysis.

Set Investor Objectives

Jack is a lecturer in management at a regional university. He's single, age 40, and has an income of $85 000 per year from salary and book royalties. His applicable tax rate is 28%. Jack wants to diversify his investment portfolio further. He would like to add a real estate investment that has good appreciation potential and provides a positive yearly after-tax cash flow. For convenience, Jack requires the property to be close to his office, and he feels his talents and personality are suited to the ownership of apartments. Jack has $60 000 in cash to invest. On this amount, he would like to earn a 13% rate of return. Jack has his eye on a small apartment building, the Academic Arms Apartments.

Analyse Important Features of the Property

The Academic Arms building is located six blocks from the Student Union. The building contains six two-bedroom, two-bath units of 125 square metres each. It was built in 1989, and all systems and building components appear to be in good condition. The present owner gave Jack an income statement reflecting the property's 2009 income and expenses. The owner has further assured Jack that no adverse easements or encumbrances affect the building's title. Of course, if Jack decides to buy Academic Arms, he will have a lawyer verify the quality of the property rights associated with the property. For now, though, he accepts the owner's word.

Jack considers a five-year holding period reasonable. At present, he's happy at the university and thinks he will stay there at least until age 45. Jack defines the market for the property as a 1.5 kilometre radius from campus. He reasons that students who walk to campus (the target market) limit their choice of apartments to those that fall within that geographic area.

Collect Data on Determinants of Value

Once Jack has analysed the important features, he next thinks about the factors that will determine the property's investment potential: (1) demand, (2) supply, (3) the property, and (4) the property transfer process.

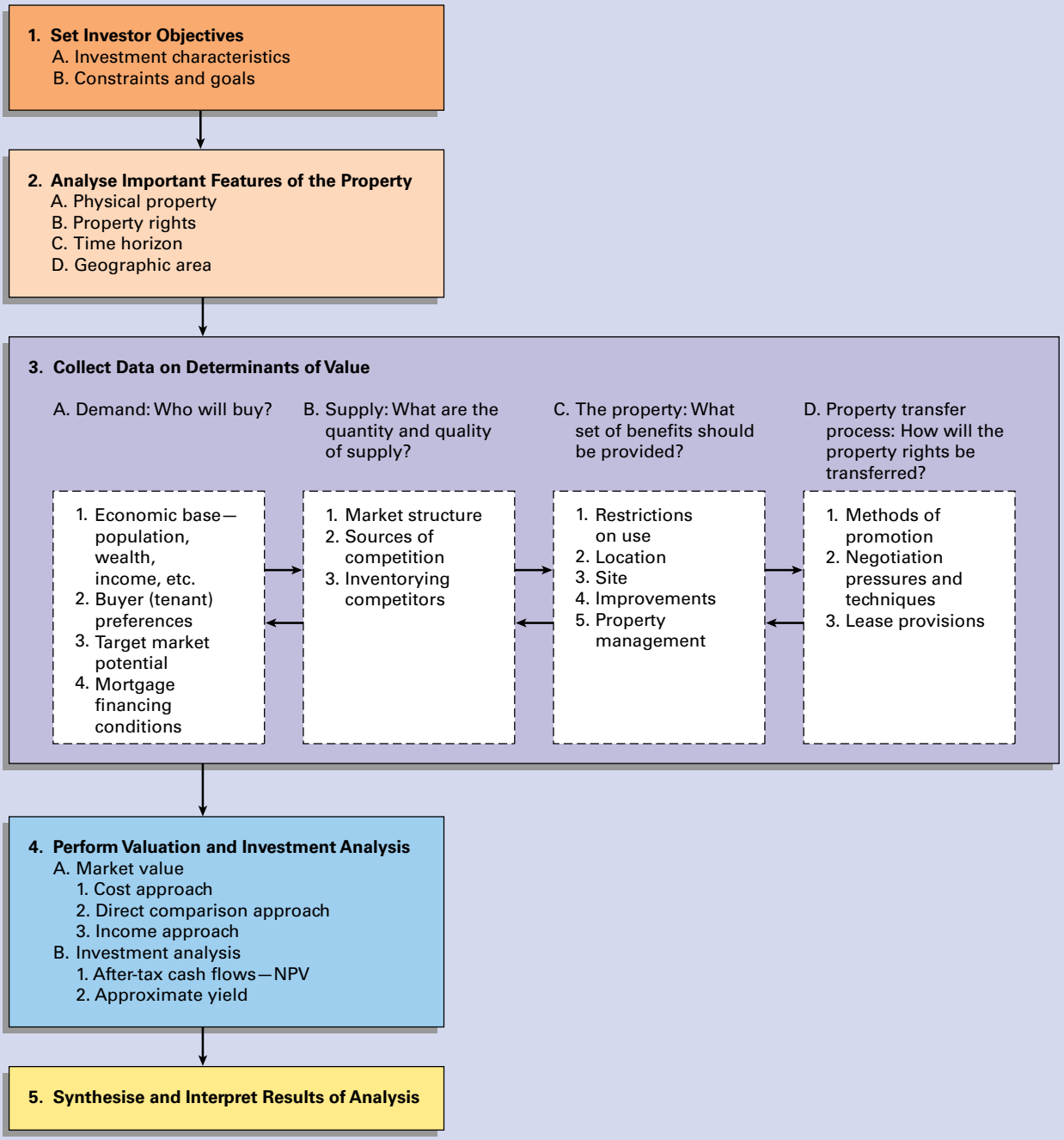
Demand The university is the lifeblood institution in the market area. The base of demand for the Academic Arms Apartments will grow (or decline) with the size of the student employment and student enrolment. On this basis, Jack judges the prospects for the area to be in the range of good to excellent. During the coming five years, growth is expected in the student population from 3200 to 3700 full-time students. Jack estimates that 70% of the new students will live away from home. In the past, the university largely served the local market, but with its new affluence—and the resources this affluence can buy—it will draw students from a wider geographic area. Furthermore, the majority of students come from upper-middle-income families. Parental support can thus be expected to heighten students' ability to pay. Overall, then, Jack believes that the major indicators of demand for the market area look promising.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 17.1

Framework for Real Estate Investment Analysis

This framework depicts a logical five-step procedure for analysing potential investment properties to assess whether they are acceptable investments that might be included in one's investment portfolio.


1. Set Investor Objectives
A. Investment characteristics
B. Constraints and goals
2. Analyse Important Features of the Property
A. Physical property
B. Property rights
C. Time horizon
D. Geographic area
3. Collect Data on Determinants of Value
A. Demand: Who will buy?
B. Supply: What are the quantity and quality of supply?
C. The property: What set of benefits should be provided?
D. Property transfer process: How will the property rights be transferred?
1. Economic base—population, wealth, income, etc.
2. Buyer (tenant) preferences
3. Target market potential
4. Mortgage financing conditions
1. Market structure
2. Sources of competition
3. Inventorying competitors
1. Restrictions on use
2. Location
3. Site
4. Improvements
5. Property management
1. Methods of promotion
2. Negotiation pressures and techniques
3. Lease provisions
4. Perform Valuation and Investment Analysis
A. Market value
1. Cost approach
2. Direct comparison approach
3. Income approach
B. Investment analysis
1. After-tax cash flows—NPV
2. Approximate yield
5. Synthesise and Interpret Results of Analysis

(*Source:* Adapted from Gary W. Eldred 1987, *Real Estate: Analysis and Strategy*, Harper & Row, Pearson Education Inc., New York.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Supply Jack realises that even strong demand cannot yield profits if a market suffers from oversupply. Fortunately, Jack thinks that Academic Arms is well insulated from competing units. Most important is the fact that the designated market area is fully built up, and as much as 80% of the area is zoned single-family residential. Any efforts to change the zoning would be strongly opposed by neighbourhood residents. The only potential problem Jack sees is that the university might build more student housing on campus. Though the administration has discussed this possibility, no funds have yet been allocated to such a project. In sum, Jack concludes that the risk of oversupply in the Academic Arms market area is low—especially during the next five years.

The Property Now the question is whether the Academic Arms Apartments will appeal to the desired market segment? On this issue, Jack concludes the answer is yes. The property already is zoned multi-family, and its present (and intended) use complies with all pertinent ordinances and housing codes. Of major importance, though, is the property's location. Not only does the site have good accessibility to the campus, but it is also three blocks from the shopping district. In addition, the aesthetic, socioeconomic, legal and fiscal environments of the property are compatible with student preferences.

On the negative side, the on-site parking has space for only five cars. Still, the building itself is attractive, and the relatively large two-bedroom, two-bath units are ideal for roommates. Although Jack has no experience managing apartments, he feels that if he studies several books on property management and applies his formal business education, he can succeed.

Property Transfer Process As noted earlier, real estate markets are not efficient. Thus, before a property's sale price or rental income can reach its potential, an effective means of getting information to buyers or tenants must be developed. Here, of course, Jack has a great advantage. Notices on campus bulletin boards and an occasional ad in the local newspaper should be all he needs to keep the property rented. Although he might experience some vacancy during the summer months, Jack feels he can overcome this problem by requiring 12-month leases but then granting tenants the right to sublet as long as the sublessees meet his tenant-selection criteria.

Perform Valuation and Investment Analysis

Real estate cash flows depend on the underlying characteristics of the property and the market. That is why we have devoted so much attention to analysing the determinants of value. Often real estate investors lose money because they 'run the numbers' without sufficient research. Jack decided to use the determinants of value to perform an investment analysis, which should allow him to assess the property's value relative to his investment objectives. He may later use an appraisal of market value as confirmation. As we go through Jack's investment analysis calculations, remember that the numbers coming out will be only as accurate as the numbers going in.

The Numbers At present, Mrs Bowker, the owner of Academic Arms Apartments, is asking $285 000 for the property. To assist in the sale, she is willing to offer owner financing to a qualified buyer. The terms would be 20% down, 10.5% interest, and full amortisation of the outstanding mortgage balance over 30 years. The owner's income statement for 2009 is shown in Table 17.4 (overleaf). After talking with Mrs Bowker, Jack believes she would probably accept an offer of $60 000 down, a price of $270 000, and a 30-year mortgage at 10%. On this basis, Jack prepares his investment calculations.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 17.4 Income Statement, Academic Arms Apartments, 2009

Gross rental income ($6 \times \$520 \times 12$)		$37 440
Operating expenses:		
Utilities	$3125	
Waste collection	745	
Repairs and maintenance	1500	
Promotion and advertising	200	
Property insurance	920	
Taxes and rates	3500	
Less: Total operating expenses		9 990
Net operating income (NOI)		$27 450

Cash Flow Analysis As a first step in cash flow analysis, Jack projects the owner's income statement for 2010 (as shown in Table 17.5). This projection reflects higher rent levels, higher expenses and a lower net operating income. Jack believes that because of poor owner management and deferred maintenance, Mrs Bowker is not getting as much in rents as the market could support. In addition, however, her expenses understate those he is likely to incur. For one thing, a management expense should be deducted. Jack wants to separate what is rightfully a return on labour from his return on capital. Also, once the property is sold, a higher tax assessment will be levied against it. All expenses have been increased to adjust for inflation and a more extensive maintenance program. With these adjustments, the NOI for Academic Arms during 2010 is estimated at $23 804.

To move from NOI to after-tax cash flows (ATCFs), we need to perform the calculations shown in Table 17.6. This table shows that to calculate ATCF, Jack must first compute the income taxes he would incur as a result of property ownership. In this case, potential tax savings accrue during the first four years because the allowable tax deductions of interest and depreciation exceed the property's net operating income; in the final year, income exceeds deductions, so taxes are due.

depreciation
in real estate investing, a tax deduction based on the original cost of a building and used to reflect its declining economic life.

The 'magic' of simultaneously losing and making money is caused by **depreciation**. Tax statutes incorporate this tax deduction, which is based on the original cost of the building, to reflect its declining economic life. However, because this deduction does not actually require a current cash outflow by the property owner, it acts as a *non-cash*

TABLE 17.5 Projected Income Statement, Academic Arms Apartments, 2010

Gross potential rental income	$39 600	
Less: Vacancy and collection losses at 4%	1 584	
Effective gross income (EGI)		$38 016
Operating expenses:		
Management at 5% of EGI	$ 1 901	
Utilities	3 400	
Waste collection	820	
Repairs and maintenance	2 500	
Promotion and advertising	200	
Property insurance	1 080	
Taxes and rates	4 311	
Less: Total operating expenses		14 212
Net operating income (NOI)		$23 804

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 17.6 Cash Flow Analysis, Academic Arms Apartments, 2010–2014

	2010	2011	2012	2013	2014
Income Tax Computations					
NOI	$23 804	$24 994	$26 244	$27 556	$28 934
– Interest*	20 947	20 825	20 690	20 541	20 376
– Depreciation**	7 454	7 454	7 454	7 454	7 454
Taxable income (loss)	($ 4 597)	($ 3 285)	($ 1 900)	($ 439)	$ 1 104
Marginal tax rate	0.28	0.28	0.28	0.28	0.28
Tax savings (+) or taxes (–)	+$ 1 287	+$ 920	+$ 532	+$ 123	–$ 309
After-Tax Cash Flow (ATCF) Computations					
NOI	$23 804	$24 994	$26 244	$27 556	$28 934
– Mortgage payment	22 115	22 115	22 115	22 115	22 115
Before-tax cash flow	$ 1 689	$ 2 879	$ 4 129	$ 5 441	$ 6 819
Tax savings (+) or taxes (–)	+ 1 287	+ 920	+ 532	+ 123	– 309
After-tax cash flow (ATCF)	$ 2 976	$ 3 799	$ 4 661	$ 5 564	$ 6 510

*Based on a $210 000 mortgage at 10% compounded annually. Some rounding has been used.
**Based on a straight-line depreciation over 27.5 years and a depreciable basis of $205 000. Land value is assumed to equal $65 000. Note that this is for illustration purposes only; depreciation rates can vary according to tax rule changes arising from government policy changes.

expenditure that reduces taxes and increases cash flow. In other words, in the 2010–2013 period, the property ownership provides Jack with a tax shelter; that is, Jack uses the income tax losses sustained on the property to offset the taxable income he receives from salary and book royalties.

Once the amount of tax savings (or taxes) is known, it is added to (or subtracted from) the before-tax cash flow. Jack can use the real estate losses to reduce his other income. *It is important to consult a tax expert about the tax consequences of expected income tax losses when calculating ATCFs from real estate investments because governments change tax rules regularly on tax rates and allowable deductions.*

Proceeds from Sale Jack must now estimate the net proceeds he will receive when he sells the property. For purposes of this analysis, Jack has assumed a five-year holding period. Now he must forecast a selling price for the property. From that amount he will subtract selling expenses, the outstanding balance on the mortgage, and applicable income taxes. The remainder equals Jack's after-tax net proceeds from sale. These calculations are shown in Table 17.7 (overleaf).

Jack wants to estimate his net proceeds from the sale conservatively. He believes that at a minimum, market forces will push up the selling price of the property at the rate of 5% per year beyond his assumed purchase price of $270 000. Thus, he estimates that the selling price in five years will be $344 520. Making the indicated deductions from the forecasted selling price, Jack computes the after-tax net proceeds from the sale to be $100 719.

Discounted Cash Flow In this step, Jack discounts the projected cash flows to find their present value, and he subtracts the amount of his equity investment from their total to get net present value (NPV). In making this calculation (see Table 17.8), Jack finds that at his required rate of return of 13%, the NPV of these amounts equals $10 452. Looked at another way, the present value of the amounts Jack forecasts he will receive exceeds the amount of his initial equity investment by $10 452. The investment therefore meets (and exceeds) his acceptance criterion.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 17.7 Estimated After-Tax Net Proceeds from Sale, Academic Arms Apartments, 2014

Computation of After-Tax Net Proceeds	
Forecasted selling price	$344 520
– Selling expenses	24 116
– Mortgage balance outstanding	202 806
Net proceeds before taxes	$117 598
–Tax payable*	16 879
After-tax net proceed from sale (CF_{R2011})	$100 719

*Tax on capital gain is for illustration only. The exact gain will depend on current tax rules on capital gains operating when the gain is generated.

TABLE 17.8 Net Present Value, Academic Arms Apartments*

$$NPV = \left(\frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \frac{CF_4}{(1+r)^4} + \frac{CF_5}{(1+r)^5}\right) - I_0$$

$$NPV = \left(\frac{\$2976}{(1+0.13)^1} + \frac{\$3799}{(1+0.13)^2} + \frac{\$4661}{(1+0.13)^3} + \frac{\$5564}{(1+0.13)^4} + \frac{\$107\,229}{(1+0.13)^5}\right) - 60\,000$$

$$NPV = \$2634 + \$2975 + \$3230 + \$3413 + \$58\,200 - \$60\,00$$

$$NPV = \$70\,452 - \$60\,000$$

$$NPV = +\$10\,452$$

*All inflows are assumed to be end-of-year receipts.
**Includes both the fifth-year annual after-tax cash flow of $6510 and the after-tax net proceeds from sale of $100 719.

Yield Alternatively, Jack could estimate the yield by using the initial equity, I_0, of $60 000, along with the after-tax cash flow, CF_j, for each year j (shown at the bottom of Table 17.6) and the after-tax net proceeds from sale, CF_{R2011}, of $100 719 (calculated in Table 17.7). The future cash flows associated with Jack's proposed investment in Academic Arms Apartments are summarised in column 1 of Table 17.9. Using these data along with the planned $60 000 equity investment, we can apply the three-step procedure described earlier in this chapter to estimate the yield.

Step 1: The investment's NPV at the 13% discount rate is $10 452, as shown in Table 17.8.

Step 2: Because the NPV in step 1 is positive, we decide to recalculate the NPV using a 16% discount rate as shown in columns 2 and 3 of Table 17.9. As shown at the bottom of column 3, the NPV at the 16% discount rate is $2488.

Step 3: Because the NPV of $2488 calculated in step 2 is well above $0, we *repeat step 2*.

Step 2: We decide to raise the discount rate to 18% and recalculate the NPV as shown in columns 4 and 5 of Table 17.9. As shown at the bottom of column 5, the NPV at the 18% discount rate is –$2183.

INVESTOR FACTS

CALCULATING CAPITAL GAINS TAX (CGT)—The basic method to calculate the CGT on an asset is as follows:

- Calculate the cost base for the asset.
- Calculate the assessable capital gain (disposal price, less cost of sales, minus the cost price).
- Offset capital losses on other asset sales.
- Offset by discount amount (50% allowance for assets held more than 12 months).
- Add the resultant capital gain to other assessable income to determine overall tax liability.

Refinements to this calculation can be found in tax legislation; see <www.ato.gov.au>.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE 17.9 Yield Estimation, Academic Arms Apartments

		NPV at 16%		NPV at 18%		NPV at 17%	
	(1)		(3)	(4)	(5)	(6)	(7)
End of Year	After-Tax Cash Flow*	(2) 16% PVIF**	(1)×(2) Present Value	18% PVIF**	(1)×(4) Present Value	17% PVIF**	(1)×(6) Present Value
1	$2 976	0.862	$2 565	0.847	$2 521	0.855	$2 544
2	3 799	0.743	2 823	0.718	2 728	0.731	2 777
3	4 661	0.641	2 988	0.609	2 839	0.624	2 908
4	5 564	0.552	3 071	0.516	2 871	0.534	2 971
5	107 229***	0.476	51 041	0.437	46 589	0.456	48 896
Present value of cash flows			$62 488		$57 817		$60 098
– Initial equity			60 000		60 000		60 000
Net Present value (NPV)			$ 2 488		–$ 2 183		$ 98

*Cash flows derived in Tables 17.6 and 17.7 and summarised in the numerators of terms to the right of the equals sign in the second equation in Table 17.8.
**PVIF represents the present-value interest factors found in Appendix A, Table A.3 see page A-6.
***Includes the fifth-year annual after-tax cash flow of $6510 and the after-tax net proceeds from sale of $100 719.

Step 3: Because the NPV of –$2183, calculated in our first repetition of step 2 is below $0, we *again repeat step 2*.

Step 2: We now decide to lower the rate by 1%, to 17%, and recalculate the NPV as shown in columns 6 and 7 of Table 17.9. As shown at the bottom of column 7, the NPV is $98.

Step 3: It is now clear that the yield is somewhere between 17% and 18%, because the NPV would equal $0 in that range. The better estimate to the nearest whole per cent is 17%, because the NPV at this rate is closer to $0 ($98) than that at the 18% rate (–$2183).

Because the yield is estimated (to the nearest whole per cent) to be 17%, which is greater than Jack's required rate of return of 13%, the investment meets—and exceeds—his acceptance criterion. Though it yields merely an estimate, when consistently applied this technique should always result in the same conclusion about acceptability as that obtained using net present value.

Synthesise and Interpret Results of Analysis

Now Jack reviews his work. He evaluates his analysis for important features and determinants of the property's value, checks all the facts and figures in the investment analysis calculations, and then evaluates the results in light of his stated investment objectives. He asks himself, 'All things considered, is the expected payoff worth the risk?' In this case, he decides it is.

Even a positive finding, however, does not necessarily mean that Jack should buy this property. He might still want to shop around to see if he can locate an even better investment. Furthermore, he might be wise to hire a real estate valuer to confirm that the price he is willing to pay seems reasonable with respect to the recent sales prices of similar properties in the market area.

Nevertheless, Jack realises that any problem can be studied to death; no one can ever obtain all the information that will bear on a decision. He gives himself a week to investigate other properties and talk to a professional appraiser. If nothing turns up to cause him to have second thoughts, he will offer to buy the Academic Arms Apartments. On the terms presented, he is willing to pay up to a maximum price of $270 000.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

CONCEPTS IN REVIEW

Answers available at: www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

17.14 List and briefly describe the five steps in the framework for real estate investment analysis shown in Figure 17.1.

17.15 Define *depreciation* from a tax viewpoint. Explain why it is said to offer tax shelter potential. What real estate investments provide this benefit? Explain.

17.16 Explain why, despite its being acceptable on the basis of NPV or of yield, a real estate investment still might not be acceptable to a given investor.

Real Estate Investment Securities

LG 5

The most popular ways to invest in real estate are through individual ownership (as we've just seen) and real estate investment trusts (REITs). Individual ownership of investment real estate is most common among wealthy individuals, professional real estate investors and financial institutions. The strongest advantage of individual ownership is personal control, and the strongest drawback is that it requires a relatively large amount of capital. Although thus far we have emphasised active, individual real estate investment, it is likely that most individuals will invest in real estate by purchasing shares of a real estate investment trust such as the Westfield Group.

Real Estate Investment Trusts (REITs)

real estate investment trust (REIT)
a type of investment company that sells shares or units to investors and invests the proceeds in various types of real estate.

A **real estate investment trust** (**REIT**) is a type of investment company that invests money, obtained through the sale of its shares to investors, in various types of real estate and real estate mortgages. REITs were established with the passage of the legislation, which set forth requirements for forming a REIT, as well as rules and procedures for making investments and distributing income. The appeal of REITs lies in their ability to allow small investors to receive both the capital appreciation and the income returns of real estate ownership without the headaches of property management.

Since the 1970s REITs have grown in Australia, and in 2009 there were around 75 REITs listed on the ASX, while there were around 800 unlisted REITs in operation with an estimated value of $24 billion. The listed REITs have over $180 billion (2010) of assets under management. Table 17.10 lists the top five listed REITs in Australia by market capitalisation. All REITs suffered during the financial crisis of 2007–2009. Investor and industry negative sentiment drove share prices down. The total returns to investors declined rapidly and led to some popular REITs recording their worst returns since they were listed (see Figure 17.2).

TABLE 17.10 Top five REITs—Market Capitalisation

REIT Name	ASX Code	Market Capitalisation (A$m)
1. Westfield Group	WDC	$27 831
2. Stockland	SGP	$9 508
3. GPT Group	GPT	$5 334
4. Lend Lease Corp	LLC	$4 521
5. Goodman Group	GMG	$4 064

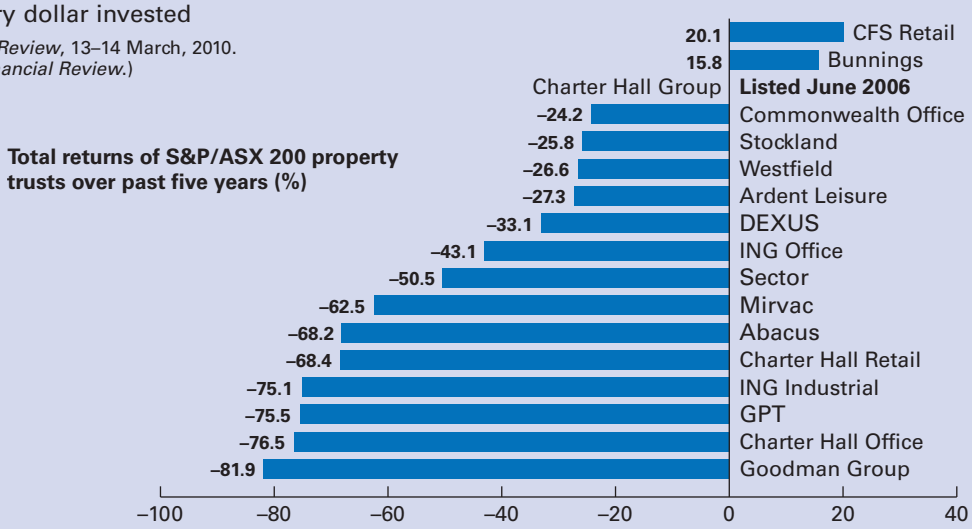
(*Source:* ASX, 31 March 2010. © ASX Limited ABN 98 008 624 691 (ASX) 2010. All rights reserved. This material is reproduced with the permission of ASX. This material should not be reproduced, stored in a retrieval system or transmitted in any form whether in whole or in part without the prior written permission of ASX.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 17.2 **REIT Performance 2005–2009**

Over the past five years, the property trust sector lost half its value, with the worst performers losing almost 80 cents of every dollar invested

(*Source: Australian Financial Review*, 13–14 March, 2010. Courtesy of the *Australian Financial Review*.)



INVESTOR FACTS

TAX ON TRUSTS—All property trusts have two tax advantages: no stamp duty on the purchase of units and concessional tax treatment.

When you purchase property directly, you pay stamp duty that can amount to thousands of dollars. You pay no such duty on purchases of units in property trusts—so funds are a way of gaining exposure to real estate without this cost.

The special tax treatment comes in because trusts have access to accounting concessions such as depreciation allowances. As a result, the income you receive from a property trust may be tax-deferred—in other words, you will not pay tax on the tax-deferred portion until your holding in the property trust is sold. This component is generally between 15% and 100% of the total dividend. The tax-deferred portion of the dividend reduces the cost base of the investment—and, when you sell the trust, tax may be levied at the concessional capital gains tax rate.

(*Source:* 'Guide to REITs', *Sydney Morning Herald*, 2008, p. 8.)

Basic Structure REITs sell shares to the investing public and use the proceeds, along with borrowed funds, to invest in a portfolio of real estate investments. The investor therefore owns part of the real estate portfolio held by the real estate investment trust. Typically, REITs yield a return at least 1 to 2 percentage points above money market funds and about the same return as high-grade corporate bonds. REITs are required by law to pay all of their taxable income as dividends, which leaves little to invest in new acquisitions.

Like any investment fund, each REIT has certain stated investment objectives, which should be carefully considered before acquiring shares. There are three basic types of REITs:

- *Equity REITs*. These invest in properties such as apartments, office buildings, shopping centres and hotels.
- *Mortgage REITs*. These make both construction and mortgage loans to real estate investors.
- *Hybrid REITs*. These invest both in properties and in construction and real estate mortgage loans.

Investing in REITs REITs provide an attractive mechanism for real estate investment by individual investors. They also provide professional management. In addition, because their shares can be traded in the securities markets, investors can purchase and sell shares conveniently with the assistance of a full-service, premium discount or basic discount broker.

The most direct way to investigate REITs before you buy is to get the names of those that interest you and then call or write to the headquarters of each for information on the properties and/or mortgages it holds, its management, its future plans and its track record. Additional information on REIT investments can be obtained from the Property Council of Australia and Property Investment Research agency.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

INVESTOR FACTS

STAPLED TRUSTS—While listed property trusts are used to almost exclusively own properties, they are now pushing into other areas such as funds management and property development. Where a trust has branched out into these areas, it usually does so by issuing a separate security of the company that represents the funds management and/or property development arm. That security is then stapled to the original security so that investors end up owning two or more securities that are related and bound together through one vehicle. These cannot be traded separately. The trust holds the portfolio of assets, while the related company conducts the funds management and/or development opportunities.

It is important for investors to realise that these new activities, although they offer potentially higher returns, also carry higher risk than simply collecting rents, as property trusts have traditionally done. As such, returns from such trusts may be more volatile than those traditionally seen in the listed property sector.

The evaluation process will, of course, depend on the type of REIT you are considering. Equity REITs tend to be most popular because they share directly in real estate growth. If a property's rent goes up, so will the dividend distribution, and share prices may also rise to reflect property appreciation. Equity REITs can be analysed by applying the same basic procedures described in Chapters 7 and 8 for share valuation. Because mortgage REITs earn most of their income as interest on real estate loans, they tend to trade like bonds; therefore, many of the techniques for analysing bond investments presented in Chapters 10 and 11 can be used to evaluate them. Hybrid REITs have the characteristics of both property and mortgages and should therefore be evaluated accordingly.

Regardless of type, you should review the REIT's investment objective and performance as you would those of a managed fund (see Chapter 12). Carefully check the types of properties and/or mortgages held by the REIT. Be sure to look at the REIT's dividend yield and capital gain potential. Above all, as with any investment, select the REIT that is consistent with your investment risk and return objectives.

Unlisted Property Trusts

There are two key differences between listed REITs and unlisted REITs. Unlisted trusts are not listed on the ASX and they can, along with direct property investments, hold listed property trusts in their investment portfolio. Investors in listed REITs can trade their shares on the ASX and have their shares continually valued by the market and sold at any time. Unlisted trusts have their underlying assets less frequently valued and investors face more uncertainty in the valuation of their shares (units) and their prospect for selling them becomes difficult when markets are adverse and the trust cannot redeem them because of cash shortages. During the 2008–2010 financial crisis period, investors in unlisted trusts were not able to access the returns on their investments since many mortgage trusts were illiquid and could not make distributions.

CONCEPTS IN REVIEW

Answers available at **www.pearson.com.au/myfinancelab** or **www.pearson.com.au/9781442532885**

17.17 Briefly describe the basic structure and investment considerations associated with a *real estate investment trust (REIT).* What are the three basic types of REITs?

Other Tangible Investments

LG 6

Although real estate investing is much more popular, some individuals find *tangibles*—investment assets, other than real estate, that can be seen and touched—to be attractive investment vehicles. Common types of tangibles (which we'll refer to as 'other tangible investments' because real estate itself is a tangible asset) include precious metals, gemstones, coins, stamps, artwork, antiques and other so-called *hard assets*. During market downturns, tangibles soar in popularity for several reasons. First, inflation has caused investors to become nervous about holding cash or securities like shares, bonds and managed funds. Their nervousness is heightened by the poor returns that securities

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

have offered. As a result, they turn to investments offering returns that exceed the rate of inflation—in other words, tangibles.

These investment vehicles tend to perform nicely during periods of high inflation, but they don't do nearly so well when inflation drops off. Indeed, the investment performance of tangibles can stand in contrast to shares during market crashes and market uncertainties. In the 2008–2010 period many investors moved to gold as crises in markets in Europe and the United States generated fear about the prospect of share and bond investments. Tangibles can be as volatile as securities. Even so, because there's still a lot of interest in tangibles as investment vehicles, we'll take a brief look at these unusual, and at times highly profitable, investment vehicles.

Tangibles as Investment Outlets

You can hold a gold coin, look at a work of art or sit in an antique car. Some tangibles, such as gold and diamonds, are easily transported and stored; others, such as art and antiques, usually are not. These differences can affect the price behaviour of tangibles. Art and antiques, for example, tend to appreciate fairly rapidly during periods of high inflation and relatively stable international conditions. Gold, on the other hand, is preferred during periods of unstable international conditions, in part because it is portable. Investors appear to believe that if international conditions deteriorate past the crisis point, at least they can 'take their gold and run'.

The market for tangibles varies widely, and therefore so does the liquidity of these investments. On the one hand are gold and silver, which can be purchased in a variety of forms and which are generally viewed as being fairly liquid because they're relatively easy to buy and sell. (To a degree, platinum also falls into this category.) On the other hand are all the other forms of tangibles, which are highly illiquid: they are bought and sold in rather fragmented markets, where transaction costs are high and where selling an item is often a time-consuming and laborious process.

The tangibles market is dominated by three forms of investments:

- Gold and other precious metals (silver and platinum)
- Gemstones (diamonds, rubies, emeralds, sapphires)
- Collectibles (everything from coins and stamps to artworks and antiques)

Over the past 15 or so years the interest in collectibles has exploded as our consumer culture has churned out even more products deemed collectible.

Investment Merits The only source of return from investing in tangibles comes in the form of *appreciation in value*—capital gains, in other words. No current income (interest or dividends) accrues from holding tangibles. Instead, if their tangibles do not appreciate rapidly in value, investors may be facing substantial *opportunity costs* in the form of lost income that could have been earned on the capital. Another factor to consider is that most tangibles have *storage and/or insurance costs* that require regular cash outlays.

The future prices and therefore the potential returns on tangibles tend to be affected by one or more of the following key factors:

- Rate of inflation

INVESTOR FACTS

ART LESSONS—Investors in fine art often seek indicators of the financial returns (capital gains) that their art investments might generate. Now they have help from an index which charts the changing values of fine art, as measured by auction sales at Christie's and Sotheby's, and systematically charts values of Impressionist, Old Master and Colonial paintings which are sold more than once. The index—the Mei/Moses Fine Art Index—reveals the historical performance of art as an investment and asset class. Fine art investment has higher volatility of returns and lower liquidity than most financial assets. Over the long run, however, US data shows art returns matching the compound annual returns in equities. Art has low correlation with other assets and can play a part in portfolio diversification.

For further discussion, see <www.artasanasset.com/main/artinvesting.php>

(*Source:* Adapted from Sara Silver, 'Index Lets Investors See the Long-term Value of Art,' *San Diego Union Tribune*, 27 May 2001, pp. H1, H6; and <www.artasanasset.com/main/artinvesting.php>.)

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

- Scarcity (supply–demand relationship) of the assets
- Domestic and international instability

Because future prices are linked to inflation as well as to the changing supply–demand relationship of these assets, investments in tangibles tend to be somewhat risky. A slowdown in inflation or a sizeable increase in the supply of the asset relative to the demand for it can unfavourably affect its market price. On the other hand, increasing inflation and continued scarcity can favourably influence the return. Another factor that tends to affect the market value—and therefore the return—of tangible investments, especially precious metals and gemstones, is the domestic and/or international political environment. In favourable times, these forms of investing are not especially popular, whereas in times of turmoil, demand for them tends to rise because of their tangible (and portable) nature.

Investing in Tangibles

To some extent, investing in tangibles is no different from investing in securities. Selection and timing are important in both cases and play a key role in determining the rate of return on invested capital. Yet when investing in tangibles, you have to be careful to separate the economics of the decision from the pleasure of owning these assets. Let's face it, many people gain a lot of pleasure from wearing a diamond, owning a piece of fine art or driving a rare car. There's certainly nothing wrong with that, but when you're buying tangible assets for their *investment merits*, there's only one thing that matters—the economic payoff from the investment.

As a serious investor in tangibles, you must consider expected price appreciation, anticipated holding period and potential sources of risk. In addition, you should carefully weigh the insurance and storage costs of holding such assets, as well as the potential impact that a lack of a good resale market can have on return. Perhaps most importantly, *don't start a serious tangibles investment program until you really know what you're doing*. Know what to look for when buying gems, a rare coin or a piece of fine art, and know what separates the good gems, rare coins or artwork from the rest. In the material that follows, we look at tangibles strictly as *investment vehicles*.

previous metals
tangibles such as gold, silver and platinum that concentrate a great deal of value in a small amount of weight and volume.

Gold and Other Precious Metals

Precious metals are tangibles that concentrate a great deal of value in a small amount of weight and volume. In other words, just a small piece of a precious metal is worth a lot of money. Three kinds of precious metals command the most investor attention: gold, silver and platinum. Prices are available daily from the Perth Mint and quoted in the financial media. On 4 June 2010, for example, gold was $1435.40/oz; silver $21.57/oz; platinum $1842.30/tr oz. Of these three, silver is normally the cheapest. It is far less expensive than either gold or platinum. Gold is by far the most popular, so we'll use gold here to discuss precious metals.

For thousands of years, people have been fascinated with gold. Records from the age of the pharaohs in Egypt show a desire to own gold. Today, ownership of gold is still regarded as a necessity by many investors, and its price has increased considerably since it traded for less than US$300 per ounce between 1997 and late 2001. Like other forms of precious metals, gold is a highly speculative investment vehicle whose price has fluctuated widely over the past 30 years (see Figure 17.3). Many investors hold at least a part—and at times, a substantial part—of their portfolios in gold as a hedge against inflation or a world economic or political disaster.

Gold can be purchased as coins, bullion or jewellery (all of which can be physically held); it can also be purchased through gold-mining shares and managed funds, gold

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

FIGURE 17.3

The Price of Gold, November 1979 through October 2009

The price of gold is highly volatile and can pave the way to big returns or, just as easily, subject the investor to large losses.

(*Source:* <www.goldprice.org>)

futures (and futures options) and gold certificates. Here's a brief rundown of the different ways gold can be held as a form of investing:

- *Gold bullion coins*. Gold bullion coins have little or no collector value; rather, their value is determined primarily by the quality and amount of gold in the coins. Popular gold coins include the American Eagle, the Canadian Maple Leaf and the Chinese Panda. (Numismatic coins, however, are valued for rarity and beauty beyond the intrinsic value of their gold content.)
- *Gold bullion*. Gold bullion is gold in its basic ingot (bar) form. Bullion ranges in weight from 5- to 400-gram bars; the kilo bar (which weighs 32.15 troy ounces) is probably the most popular size.
- *Gold jewellery*. Jewellery is a popular way to own gold, but it's not a very good way to invest in gold, because gold jewellery usually sells for a substantial premium over its underlying gold value (to reflect artisan costs, retail markups and other factors). Moreover, most jewellery is not pure 24-carat gold but a 14- or 18-carat blend of gold and other, non-precious metals.
- *Gold shares, managed funds and exchange-traded funds (ETFs)*. Many investors prefer to purchase shares of gold-mining companies, managed funds or ETFs that invest in gold shares. The prices of gold-mining shares tend to move in direct relationship to the price of gold. Thus, when gold rises in value, these shares usually move up, too. It is also possible to purchase shares in managed funds that invest primarily in gold-mining shares. Gold funds offer professional management and a much higher level of portfolio diversification; the shares of gold-oriented managed

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

funds also tend to fluctuate along with the price of gold. Additionally, a number of exchange-traded funds (ETFs) linked to gold prices have become available.

- *Gold futures*. A popular way of investing in the short-term price volatility of gold is through futures contracts or futures options.
- *Gold certificates*. A convenient and safe way to own gold is to purchase a gold certificate through a bank or broker. The certificate represents ownership of a specific quantity of gold that is stored in a bank vault. In this way, you do not have to be concerned about the safety that taking physical possession of gold entails.

Like gold, silver and platinum can be bought in a variety of forms. Silver can be purchased as bags of silver coins, bars or ingots, silver-mining shares, futures contracts or futures options. Similarly, platinum can be bought in the form of coins, plates and ingots, platinum-mining shares or futures contracts.

Transaction costs in precious metals vary widely, depending on the investment form chosen. At one extreme, an investor buying one Canadian Maple Leaf coin might pay 5% commission, 7% dealer markup and 4% tax. In contrast, the purchase of a gold certificate would entail only a small commission. Storage costs vary as well. Gold coins and bars can easily be stored in a safe-deposit box. Gold purchased via gold certificates usually is subject to a fee of less than 1% per year. Gold coins, bullion and jewellery can be easily stolen, so it is imperative that these items be stored in a safe-deposit box at a bank or other depository. Except for transaction costs, the expenses of buying and holding gold can be avoided when investments are made in gold-mining shares and managed funds and in gold futures. Most financial advisers in Australia recommend that gold should be held only when the investment portfolio is $1 million or more. For a $1 million portfolio the gold investment should not exceed $50 000 (i.e. not more than 5%).

Gemstones By definition, gemstones consist of diamonds and the so-called coloured precious stones (rubies, sapphires and emeralds). Precious stones offer their owners beauty and are often purchased for aesthetic pleasure. However, diamonds and coloured stones also serve as a viable form of investing. Along with gold, they are among the oldest of investment vehicles, providing a source of real wealth, as well as a hedge against political and economic uncertainties. However, diamonds and coloured stones are very much a specialist's domain. Generally, standards of value are fully appreciated only by experienced personnel at fine stores, dealers, cutters and an occasional connoisseur-collector. In diamonds, the value depends on the whiteness of the stone and the purity of crystallisation. A key factor, therefore, is for the purchaser to understand the determinants of quality. Precious stones vary enormously in price, depending on how close they come to gem colour and purity.

Investment diamonds and coloured stones can be purchased through registered gem dealers. Depending on quality and grade, commissions and dealer markups can range from 20% to 100%. Because of the difficulty in valuing gemstones, it is imperative to select only dealers with impeccable reputations. As investment vehicles, diamonds and coloured stones offer no current income, but their prices are highly susceptible to changing market conditions. For example, the peak price of the best-quality, flawless one-carat diamond, a popular investment diamond, was about US$60 000 in early 1980. By late 1982, this stone was worth only about US$20 000—a drop of 67% in just over two years. Since then, prices have fallen to between US$5 000 and US$12 000 in late 2009, depending upon the colour and clarity of the diamond.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

The big difficulty in precious stone investments, aside from the expertise needed in deciding what is in fact gem quality, is the relative illiquidity of the stones. As a rule, gemstones should be purchased only by investors who can hold them for at least two years; high transaction costs usually mean that profitable resale is not possible after shorter periods. Furthermore, gemstones can be difficult to resell, and sellers often wait a month or more for a sale. Diamonds and coloured stones also require secure storage, and there are no payoffs prior to sale.

Collectibles Collectibles represent a broad range of items—from coins and stamps to posters and cars—that are desirable for any number of reasons, such as beauty, scarcity, historical significance or age. Collectibles have value because of their attractiveness to collectors. During the 1970s, many collectibles shot up in value, but since the early 1980s, most have either fallen in value or have appreciated at a much lower rate than inflation. There are some exceptions, of course, but they remain just that—the exception rather than the rule. Some examples of collectibles that have done well in recent years are paintings, exotic cars, cartoon celluloids and colonial furniture.

An investment-grade collectible is an item that is relatively scarce as well as historically significant within the context of the collectible genre itself and, preferably, within the larger context of the culture that produced it. Further, it should be in excellent condition and attractive to display. Although there are almost no bounds to what can be collected (beer cans, fishing tackle, magazines, sheet music), the major categories of collectibles that tend to offer the greatest investment potential include:

- Rare coins (numismatics)
- Rare stamps (philately)
- Artwork (the paintings, prints, sculpture and crafts of recognised artists)
- Antiques (cars, furniture, etc.)
- Books
- Games, toys and comic books
- Posters
- Movie memorabilia
- Historical letters

In general, collectibles are not very liquid. Their resale markets are poor, and transaction costs can be high. Artwork, for example, commonly has a 100% dealer markup. (Works sold on consignment to dealers have much lower costs—generally, a commission of 'only' 25%—but they can take months to sell.) In addition, investing in collectibles can be hazardous unless you understand the intricacies of the market. In this area of investing, you are well advised to become a knowledgeable collector before even attempting to be a serious investor in collectibles.

Although certain psychic income may be realised in the form of aesthetic pleasure, the financial return, if any, is realised only when the item is sold. On a strictly financial basis, items that have a good market and are likely to appreciate in value are the ones to collect. If an item under consideration is expensive, its value and authenticity should always be confirmed by an expert prior to purchase. (There are many unscrupulous dealers in collectible items.) After purchase, you should make certain to store collectibles in a safe place and adequately insure them against all

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

relevant perils. Despite these obstacles, collectibles can provide highly competitive rates of return and can be good inflation hedges during periods of abnormally high inflation.

CONCEPTS IN REVIEW

Answers available at www.pearson.com.au/myfinancelab or www.pearson.com.au/9781442532885

17.18 What are *tangibles*? Briefly describe the conditions that tend to cause tangibles to rise in price.

17.19 What are the three basic forms of tangible investments? Briefly discuss the investment merits of tangibles. Be sure to note the key factors that affect the future prices of tangibles.

17.20 Describe the different ways in which one can hold gold and other precious metals as a form of investing. Discuss gemstone investments in terms of quality, commissions and liquidity.

17.21 What are some popular types of collectibles? What important variables should be taken into account when investing in them?

myfinancelab To test your mastery of the content covered in this chapter and to create your own personalised study plan go to **www.pearson.com.au/myfinancelab**.

Summary

LG 1 Describe how real estate investment objectives are set, how the features of real estate are analysed, and what determines real estate value. The starting point for investing in real estate is setting objectives. Investment real estate includes income properties, which can be residential or commercial, and speculative properties, such as vacant land, which are expected to provide returns from appreciation in value rather than from periodic rental income. The investor also needs to analyse important features such as the physical property, the rights that owning it entails, the relevant time horizon, and the geographic area of concern.

The four determinants of real estate value are demand, supply, the property and the property transfer process. Demand refers to people's willingness to buy or rent, and supply includes all those properties from which potential buyers or tenants can choose. To analyse a property, one should evaluate its restrictions on use, location, site, improvements and property management. The transfer process involves promotion and negotiation of a property.

LG 2 Discuss the valuation techniques commonly used to estimate the market value of real estate. A market value appraisal can be used to estimate real estate value. The three imperfect approaches to real estate valuation are the cost approach, the comparative sales approach and the income approach. The cost approach estimates replacement cost. The comparative sales approach bases value on the prices at which similar properties recently sold. The income approach measures value as the present value of all the property's future income.

Key Terms

convenience (in real estate), *p. 544*
demand (in real estate), *p. 542*
demographics, *p. 542*
environment (in real estate), *p. 544*
improvements (in real estate), *p. 544*
income property, *p. 541*
principle of substitution, *p. 543*
property management, *p. 545*
property transfer process, *p. 545*
psychographics, *p. 542*
real estate, *p. 540*
speculative property, *p. 541*
supply (in real), *p. 543*
tangibles, *p. 540*

comparative sales approach, *p. 547*
cost approach, *p. 547*
income approach, *p. 547*
market capitalisation rate, *p. 547*
market value (in real estate), *p. 546*
net operating income (NOI), *p. 547*
valuation, *p. 546*

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Summary	Key Terms
LG 3 Understand the procedures involved in performing real estate investment analysis. Real estate investment analysis considers the underlying determinants of a property's value. It involves forecasting a property's cash flows and then calculating either their net present value or the yield to evaluate the proposed investment relative to the investor's objectives. Risk and return parameters vary depending on the degree of leverage employed in financing a real estate investment. Any quantitative analysis of real estate value and returns must be integrated with various subjective and market considerations.	after-tax cash flows (ATCFs), *p. 551* discounted cash flow, *p. 551* investment analysis, *p. 548* leverage (in real estate), *p.549* negative leverage, *p. 549* net present value (NPV), *p. 551* positive leverage, *p. 549*
LG 4 Demonstrate the framework used to value a prospective real estate investment, and evaluate results in light of the stated investment objectives. The framework for analysing a potential real estate investment involves five steps: (1) set investor objectives, (2) analyse important features of the property, (3) collect data on determinants of value, (4) perform valuation and investment analysis, which involves forecasting the property's cash flows and either applying discounted cash flow techniques to find the net present value (NPV) or estimating the yield, and (5) synthesise and interpret results of analysis.	depreciation (in real estate), *p. 556*
LG 5 Describe the structure and investment appeal of real estate investment trusts. Real estate investment trusts can provide investors with an alternative to active real estate ownership. REITs allow investors to buy publicly traded ownership shares in a professionally managed portfolio of real estate properties, mortgages or both. The risk–return characteristics of REITs can be analysed much like shares, bonds and managed funds.	real estate investment trust (REIT), *p. 560*
LG 6 Understand the investment characteristics of tangibles such as gold and other precious metals, gemstones and collectibles, and review the suitability of investing in them. Tangibles represent a non–real-estate investment vehicle that can be seen and touched and that has an actual form and substance. The three basic types of tangibles are gold and other precious metals, gemstones and collectibles. Some tangibles, particularly precious metals, can be held in a variety of forms. Tangibles generally provide substantial returns during periods of high inflation.	precious metals, *p. 564*

Discussion Questions

LG 1

Q17.1 Assume you have inherited a large sum of money and wish to use part of it to make a real estate investment.

a. Would you invest in income property or speculative property? Why? Describe the key characteristics of the income or speculative property on which you would focus your search.

b. Describe the financial and non-financial goals you would establish prior to initiating a search for suitable property.

c. What time horizon would you establish for your analysis? What geographic area would you isolate for your property search?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

LG1 LG4 **Q17.2** Imagine that you have been hired by a wealthy out-of-town investor to find him a residential income property investment with five to 10 units located within a five-mile radius of the college or university you attend.

a. Search the defined area to find three suitable properties. You may want to use a real estate agent to isolate suitable properties more quickly.

b. Research the area to assess the demand for the properties you've isolated. Be sure to consider both the demographics and the psychographics of the area's population. Also assess mortgage market conditions as they would relate to financing 75% of each property's purchase price.

c. Assess the supply of competitive properties in the geographic area you've isolated. Identify the key competitive properties by using the principle of substitution.

d. Compare the competitive positions of the properties, and isolate the best property on the basis of the following five features: (i) restrictions on use, (ii) location, (iii) site, (iv) improvements, and (v) property management.

LG2 LG3 LG4 **Q17.3** Contact a local real estate agent and obtain a copy of a valuation he or she has performed on an investment property in your immediate general geographic area.

a. Review the analysis and critically evaluate the agent's work. Specifically review the cost approach, the comparative sales approach and the income approach.

b. Drive by the property and assess the demand for and supply of competitive properties in the area.

c. On the basis of your review of the agent's professional analysis and your own assessment of the property, make a list of your questions and comments on the professional analysis.

d. Make an appointment with the agent who provided you with the analysis, and in your meeting with him or her, go over your list of questions and comments.

LG5 **Q17.4** Contact a stockbroker and obtain and study a copy of a product disclosure statement for a popular real estate investment trust (REIT).

a. Indicate what type of REIT (equity, mortgage or hybrid) it represents.

b. Evaluate the quality of the properties it holds.

c. Assess the REIT's financial and management track record, using the Internet to provide current performance data.

d. Would you invest in this REIT? Explain why, including how it does or doesn't meet your investment objectives.

LG6 **Q17.5** Assume you're interested in investing in gold to protect against an expected significant decline in consumer confidence and securities values.

a. Isolate and evaluate the various alternatives for investing in gold coins, gold shares, gold futures and gold certificates.

b. Prepare a comparative grid of the costs, ease of purchase and sale, commissions (if any) and potential returns from each of these alternative ways to invest in gold.

c. Choose and justify your choice of the best of these alternative investments in gold. Discuss the risks you associate with this investment.

d. What alternative forms of tangible investment (excluding real estate) would you consider as potential substitutes for gold?

Problems

All problems are available on **www.pearson.com.au/myfinancelab**

LG2 LG3 **P17.1** Charles Cook, an investor, is considering two alternative financing plans for purchasing a parcel of real estate costing $50 000. Alternative X involves paying cash; alternative Y involves obtaining 80% financing at 10.5% interest. If the parcel of real estate appreciates in value by $7500 in one year, calculate (a) Charles's net return and (b) his return on equity for

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

each alternative. If the value dropped by $7500, what effect would this have on your answers to parts **a** and **b**?

LG2 LG3 **P17.2** In the coming year, the Sandbergs expect a potential rental property investment costing $120 000 to have gross potential rental income of $20 000, vacancy and collection losses equalling 5% of gross income, and operating expenses of $10 000. The mortgage on the property is expected to require annual payments of $8500. The interest portion of the mortgage payments and the depreciation are given below for each of the next three years. The Sandbergs are in the 25% marginal tax bracket.

Year	Interest	Depreciation
1	$8300	$4500
2	8200	4500
3	8100	4500

The net operating income is expected to increase by 6% each year beyond the first year.

a. Calculate the net operating income (NOI) for each of the next three years.

b. Calculate the after-tax cash flow (ATCF) for each of the next three years.

LG2 LG3 **P17.3** William Hubble is contemplating selling rental property that originally cost $200 000. He believes that it has appreciated in value at an annual rate of 6% over its four-year holding period. He will have to pay a commission equal to 5% of the sale price to sell the property. Currently, the property has a book value of $137 000. The mortgage balance outstanding at the time of sale currently is $155 000. He will have to pay a 20% tax on any capital gains.

a. Calculate the tax payable on the proposed sale.

b. Calculate the after-tax net proceeds associated with the proposed sale, CF_R.

LG3 **P17.4** Jane Foster has estimated the annual after-tax cash flows (ATCFs) and after-tax net proceeds from the sale (CF_R) of a proposed real estate investment as noted below for the planned four-year ownership period.

Year	ATCF	CF_R
1	$6200	
2	8000	
3	8300	
4	8500	$59 000

The initial required investment in the property is $55 000. Jane must earn at least 14% on the investment.

a. Calculate the net present value (NPV) of the proposed investment.

b. Estimate the yield (to the nearest whole per cent) from the investment.

c. From your findings in parts **a** and **b**, what recommendation would you give Jane? Explain.

Visit **www.pearson.com.au/myfinancelab** for web exercises, spreadsheets and other online resources.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Case Problem 17.1 GARY SOFER'S APPRAISAL OF THE WABA APARTMENTS

LG2 LG3 LG4 Gary Sofer wants to estimate the market value of the Waba Oaks Apartments, a 12-unit building with six one-bedroom units and six two-bedroom units. The present owner of Waba Oaks provided Gary with the following annual income statement. Today's date is 1 March 2009.

Owner's Income Statement
Waba Oaks Apartments, 2008

Gross income		$65 880
Less: Expenses		
Utilities	$14 260	
Property insurance	2 730	
Repairs and maintenance	1 390	
Property taxes	4 790	
Mortgage payments	18 380	
Total expenses		41 550
Net income		$24 330

Current rental rates of properties similar to Waba typically run from $425 to $450 per month for one-bedroom units and $500 to $550 per month for two-bedroom units. From a study of the market, Gary determined that a reasonable required rate of return for Waba Oaks would be 9.62% and that vacancy rates for comparable apartment buildings are running around 4%.

QUESTIONS

1. Using Figure 17.1 on page 554 as a guide, discuss how you might go about evaluating the features of this property.
2. Gary has studied economics and knows about demand and supply, yet he doesn't understand how to apply them to an investment analysis. Advise Gary in a practical way how he might incorporate demand and supply into an investment analysis of the Waba Oaks Apartments.
3. Should Gary accept the owner's income statement as the basis for an income appraisal of Waba? Why or why not?
4. In your opinion, what is a reasonable estimate of the market value for the Waba Oaks?
5. If Gary could buy Waba Oaks for $10 000 less than its market value, would it be a good investment for him? Explain.

Case Problem 17.2 ANALYSING DR DAVIS'S PROPOSED REAL ESTATE INVESTMENT

LG1 LG2 LG3 LG4 Dr Marilyn Davis, a single, 34-year-old heart specialist, is considering the purchase of a small office unit. She wants to add some diversity to her investment portfolio, which now contains only corporate bonds and preference shares. In addition, because of her high tax bracket of 36%, Marilyn wants an investment that produces a good after-tax rate of return.

A real estate market and financial consultant has estimated that Marilyn could buy the office unit for $200 000. In addition, this consultant analysed the property's rental potential with respect to trends in demand and supply. He discussed the following items with Marilyn: (1) the office unit was occupied by a tenant, who had three years

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

remaining on her lease, and (2) it was only four years old, was in excellent condition, and was located near a number of major thoroughfares. For her purposes, Marilyn decided the office unit should be analysed on the basis of a three-year holding period. The gross rents in the most recent year were $32 000, and operating expenses were $15 000. The consultant pointed out that the lease had a built-in 10% per year rent escalation clause and that he expected operating expenses to increase by 8% per year. He further expected no vacancy or collection loss, because the tenant was an excellent credit risk.

Marilyn's accountant estimated that annual depreciation would be $7272 in each of the next three years. To finance the purchase of the office unit, Marilyn has considered a variety of alternatives, one of which would involve assuming the existing $120 000 mortgage. On the advice of a close friend, a finance professor at the local university, Marilyn decided to arrange a $150 000, 10.5%, 25-year mortgage from the bank at which she maintains her business account. The annual loan payment would total $16 995. Of this, the following breakdown between interest and principal would apply in each of the first three years:

Year	Interest	Principal	Total
1	$15 688	$1307	$16 995
2	15 544	1451	16 995
3	15 384	1611	16 995

The loan balance at the end of the three years would be $145 631. The consultant expects the property to appreciate by about 9% per year to $259 000 at the end of three years. Marilyn would incur a 5% sales commission expense on this assumed sale price. The office unit's book value at the end of three years would be $178 184. The net proceeds on the sale would be taxed at Marilyn's average tax rate of 20% (her effective rate).

QUESTIONS

1. What is the expected annual after-tax cash flow (ATCF) for each of the three years (assuming Marilyn has other passive income that can be used to offset any losses from this property)?
2. At a 15% required rate of return, will this investment produce a positive net present value?
3. What is the estimated yield for this proposed investment?
4. Could Marilyn increase her returns by assuming the existing mortgage at a 9.75% interest rate rather than arranging a new loan? What measure of return do you believe Marilyn should use to make this comparison?
5. Do you believe Marilyn has thought about her real estate investment objectives enough? Why or why not?

Real estate and tangible assets are very specialised areas of investing. Anyone who doesn't understand the unique nature of these assets should not have either of them in their investment portfolio. When it comes to the Web, there is a bias towards the area of residential real estate (home purchasing). Most sites are intent on educating homebuyers and helping them to obtain information on making this purchase. The market for investing in commerical real estate and tangible assets receives some attention on the Web.

WEBSITE	URL
Property Council of Australia	www.propertyoz.com.au
Real Estate Institute of Australia	www.reia.com.au
Property Investment Research	www.pir.com.au
Smart Investor	www.afrsmartinvestor.com.au

Visit www.pearson.com.au/myfinancelab for links to additional websites that readers will find useful.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

APPENDIX

A Financial tables

Table A.1

Future value interest factors for one dollar compounded at r% for n periods:

$$FVIF_{r,n} = (1 + r)^n$$

Table A.2

Future value interest factors for a one-dollar annuity compounded at r% for n periods:

$$FVIFA_{r,n} = \sum_{t=1}^{n} \left(1 + r\right)^{t-1}$$

Table A.3

Present value interest factors for one dollar discounted at r% for n periods:

$$PVIF_{r,n} = \frac{1}{\left(1 + r\right)^n}$$

Table A.4

Present value interest factors for a one-dollar annuity discounted at r% for n periods:

$$PVIFA_{r,n} = \sum_{t=1}^{n} \frac{1}{\left(1 + r\right)^t}$$

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A.1 Future Value Interest Factors for One Dollar Compounded at *r*% for *n* Periods: $FVIF_{r,n} = (1 + r)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100	1.110	1.120	1.130	1.140	1.150	1.160	1.170	1.180	1.190	1.200
2	1.020	1.040	1.061	1.082	1.102	1.124	1.145	1.166	1.188	1.210	1.232	1.254	1.277	1.300	1.322	1.346	1.369	1.392	1.416	1.440
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331	1.368	1.405	1.443	1.482	1.521	1.561	1.602	1.643	1.685	1.728
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464	1.518	1.574	1.630	1.689	1.749	1.811	1.874	1.939	2.005	2.074
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611	1.685	1.762	1.842	1.925	2.011	2.100	2.192	2.288	2.386	2.488
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772	1.870	1.974	2.082	2.195	2.313	2.436	2.565	2.700	2.840	2.986
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949	2.076	2.211	2.353	2.502	2.660	2.826	3.001	3.185	3.379	3.583
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144	2.305	2.476	2.658	2.853	3.059	3.278	3.511	3.759	4.021	4.300
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358	2.558	2.773	3.004	3.252	3.518	3.803	4.108	4.435	4.785	5.160
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594	2.839	3.106	3.395	3.707	4.046	4.411	4.807	5.234	5.695	6.192
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853	3.152	3.479	3.836	4.226	4.652	5.117	5.624	6.176	6.777	7.430
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138	3.498	3.896	4.334	4.818	5.350	5.936	6.580	7.288	8.064	8.916
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452	3.883	4.363	4.898	5.492	6.153	6.886	7.699	8.599	9.596	10.699
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797	4.310	4.887	5.535	6.261	7.076	7.987	9.007	10.147	11.420	12.839
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177	4.785	5.474	6.254	7.138	8.137	9.265	10.539	11.974	13.589	15.407
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595	5.311	6.130	7.067	8.137	9.358	10.748	12.330	14.129	16.171	18.488
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054	5.895	6.866	7.986	9.276	10.761	12.468	14.426	16.672	19.244	22.186
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560	6.543	7.690	9.024	10.575	12.375	14.462	16.879	19.673	22.900	26.623
19	1.208	1.457	1.753	2.107	2.527	3.026	3.616	4.316	5.142	6.116	7.263	8.613	10.197	12.055	14.232	16.776	19.748	23.214	27.251	31.948
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727	8.062	9.646	11.523	13.743	16.366	19.461	23.105	27.393	32.429	38.337
21	1.232	1.516	1.860	2.279	2.786	3.399	4.140	5.034	6.109	7.400	8.949	10.804	13.021	15.667	18.821	22.574	27.033	32.323	38.591	46.005
22	1.245	1.546	1.916	2.370	2.925	3.603	4.430	5.436	6.658	8.140	9.933	12.100	14.713	17.861	21.644	26.186	31.629	38.141	45.923	55.205
23	1.257	1.577	1.974	2.465	3.071	3.820	4.740	5.871	7.258	8.954	11.026	13.552	16.626	20.361	24.891	30.376	37.005	45.007	54.648	66.247
24	1.270	1.608	2.033	2.563	3.225	4.049	5.072	6.341	7.911	9.850	12.239	15.178	18.788	23.212	28.625	35.236	43.296	53.108	65.031	79.496
25	1.282	1.641	2.094	2.666	3.386	4.292	5.427	6.848	8.623	10.834	13.585	17.000	21.230	26.461	32.918	40.874	50.656	62.667	77.387	95.395
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612	10.062	13.267	17.449	22.892	29.960	39.115	50.949	66.210	85.849	111.061	143.367	184.672	237.373
35	1.417	2.000	2.814	3.946	5.516	7.686	10.676	14.785	20.413	28.102	38.574	52.799	72.066	98.097	133.172	180.311	243.495	327.988	440.691	590.657
40	1.489	2.208	3.262	4.801	7.040	10.285	14.974	21.724	31.408	45.258	64.999	93.049	132.776	188.876	267.856	378.715	533.846	750.353	1051.642	1469.740
45	1.565	2.438	3.781	5.841	8.985	13.764	21.002	31.920	48.325	72.888	109.527	163.985	244.629	363.662	538.752	795.429	1170.425	1716.619	2509.583	3657.176
50	1.645	2.691	4.384	7.106	11.467	18.419	29.456	46.900	74.354	117.386	184.559	288.996	450.711	700.197	1083.619	1670.669	2566.080	3927.189	5988.730	9100.191

Using the Calculator to Calculate the Future Value of a Single Amount

Before you begin, clear the memory, ensure that you are in the *end mode* and your calculator is set for *one payment per year*, and set the number of decimal places that you want (usually two for dollar-related accuracy).

Sample Problem

You place $800 in a savings account at 6% compounded annually. What is your account balance at the end of five years?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A.1 *(Continued)*

Period	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	40%	45%	50%
1	1.210	1.220	1.230	1.240	1.250	1.260	1.270	1.280	1.290	1.300	1.310	1.320	1.330	1.340	1.350	1.400	1.450	1.500
2	1.464	1.488	1.513	1.538	1.562	1.588	1.613	1.638	1.664	1.690	1.716	1.742	1.769	1.796	1.822	1.960	2.102	2.250
3	1.772	1.816	1.861	1.907	1.953	2.000	2.048	2.097	2.147	2.197	2.248	2.300	2.353	2.406	2.460	2.744	3.049	3.375
4	2.144	2.215	2.289	2.364	2.441	2.520	2.601	2.684	2.769	2.856	2.945	3.036	3.129	3.224	3.321	3.842	4.421	5.063
5	2.594	2.703	2.815	2.932	3.052	3.176	3.304	3.436	3.572	3.713	3.858	4.007	4.162	4.320	4.484	5.378	6.410	7.594
6	3.138	3.297	3.463	3.635	3.815	4.001	4.196	4.398	4.608	4.827	5.054	5.290	5.535	5.789	6.053	7.530	9.294	11.391
7	3.797	4.023	4.259	4.508	4.768	5.042	5.329	5.629	5.945	6.275	6.621	6.983	7.361	7.758	8.172	10.541	13.476	17.086
8	4.595	4.908	5.239	5.589	5.960	6.353	6.767	7.206	7.669	8.157	8.673	9.217	9.791	10.395	11.032	14.758	19.541	25.629
9	5.560	5.987	6.444	6.931	7.451	8.004	8.595	9.223	9.893	10.604	11.362	12.166	13.022	13.930	14.894	20.661	28.334	38.443
10	6.727	7.305	7.926	8.594	9.313	10.086	10.915	11.806	12.761	13.786	14.884	16.060	17.319	18.666	20.106	28.925	41.085	57.665
11	8.140	8.912	9.749	10.657	11.642	12.708	13.862	15.112	16.462	17.921	19.498	21.199	23.034	25.012	27.144	40.495	59.573	86.498
12	9.850	10.872	11.991	13.215	14.552	16.012	17.605	19.343	21.236	23.298	25.542	27.982	30.635	33.516	36.644	56.694	86.380	129.746
13	11.918	13.264	14.749	16.386	18.190	20.175	22.359	24.759	27.395	30.287	33.460	36.937	40.745	44.912	49.469	79.371	125.251	194.620
14	14.421	16.182	18.141	20.319	22.737	25.420	28.395	31.691	35.339	39.373	43.832	48.756	54.190	60.181	66.784	111.119	181.614	291.929
15	17.449	19.742	22.314	25.195	28.422	32.030	36.062	40.565	45.587	51.185	57.420	64.358	72.073	80.643	90.158	155.567	263.341	437.894
16	21.113	24.085	27.446	31.242	35.527	40.357	45.799	51.923	58.808	66.541	75.220	84.953	95.857	108.061	121.713	217.793	381.844	656.841
17	25.547	29.384	33.758	38.740	44.409	50.850	58.165	66.461	75.862	86.503	98.539	112.138	127.490	144.802	164.312	304.911	553.674	985.261
18	30.912	35.848	41.523	48.038	55.511	64.071	73.869	85.070	97.862	112.454	129.086	148.022	169.561	194.035	221.822	426.875	802.826	1477.892
19	37.404	43.735	51.073	59.567	69.389	80.730	93.813	108.890	126.242	146.190	169.102	195.389	225.517	260.006	299.459	597.625	1164.098	2216.838
20	45.258	53.357	62.820	73.863	86.736	101.720	119.143	139.379	162.852	190.047	221.523	257.913	299.937	348.408	404.270	836.674	1687.942	3325.257
21	54.762	65.095	77.268	91.591	108.420	128.167	151.312	178.405	210.079	247.061	290.196	340.446	398.916	466.867	545.764	1171.343	2447.515	4987.883
22	66.262	79.416	95.040	113.572	135.525	161.490	192.165	228.358	271.002	321.178	380.156	449.388	530.558	625.601	736.781	1639.878	3548.896	7481.824
23	80.178	96.887	116.899	140.829	169.407	203.477	244.050	292.298	349.592	417.531	498.004	593.192	705.642	838.305	994.653	2295.829	5145.898	11222.738
24	97.015	118.203	143.786	174.628	211.758	256.381	309.943	374.141	450.974	542.791	652.385	783.013	938.504	1123.328	1342.781	3214.158	7461.547	16834.109
25	117.388	144.207	176.857	216.539	264.698	323.040	393.628	478.901	581.756	705.627	854.623	1033.577	1248.210	1505.258	1812.754	4499.816	10819.242	25251.164
30	304.471	389.748	497.904	634.810	807.793	1025.904	1300.477	1645.488	2078.208	2619.936	3297.081	4142.008	5194.516	6503.285	8128.426	24201.043	69348.375	191751.000
35	789.716	1053.370	1401.749	1861.020	2465.189	3258.053	4296.547	5653.840	7423.988	9727.598	12719.918	16598.906	21617.363	28096.695	36448.051	130158.687	*	*
40	2048.309	2846.941	3946.340	5455.797	7523.156	10346.879	14195.051	19426.418	26520.723	36117.754	49072.621	66519.313	89962.188	121388.437	163433.875	700022.688	*	*
45	5312.758	7694.418	11110.121	15994.316	22958.844	32859.457	46897.973	66748.500	94739.937	134102.187	*	*	*	*	*	*	*	*
50	13779.844	20795.680	31278.301	46889.207	70064.812	104354.562	154942.687	229345.875	338440.000	497910.125	*	*	*	*	*	*	*	*

*Not shown because of space limitations.

Sharp EL 733A, 735

Inputs:	800	5	6			
Functions:	PV	N	i	COMP	FV	
Output:						*1070.58

Hewlett-Packard HP 12C, 17B11, 19B11

Inputs:	800	5	6			
Functions:	PV	N	I%YR	FV		
Output:						*1070.58

Casio fx-82AU PLUS or fx-100AU Scientific

Inputs:	800x(1.06) x ■5		(or use ^ instead of x■)			
Functions:	1.06 x ■5 =			AC Ansx800**		
Output:						1070.58

* If a minus sign precedes the output, it should be ignored.
** Press AC to clear the screen. Press Ans to retrieve the previous calculation.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A.2 Future Value Interest Factors for a One Dollar Annuity Compounded at *r*% for *n* Periods:

$$FVIFA_{r,n} = \sum_{t=1}^{n} (1+r)^{t-1}$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.010	2.020	2.030	2.040	2.050	2.060	2.070	2.080	2.090	2.100	2.110	2.120	2.130	2.140	2.150	2.160	2.170	2.180	2.190	2.200
3	3.030	3.060	3.091	3.122	3.152	3.184	3.215	3.246	3.278	3.310	3.342	3.374	3.407	3.440	3.472	3.506	3.539	3.572	3.606	3.640
4	4.060	4.122	4.184	4.246	4.310	4.375	4.440	4.506	4.573	4.641	4.710	4.779	4.850	4.921	4.993	5.066	5.141	5.215	5.291	5.368
5	5.101	5.204	5.309	5.416	5.526	5.637	5.751	5.867	5.985	6.105	6.228	6.353	6.480	6.610	6.742	6.877	7.014	7.154	7.297	7.442
6	6.152	6.308	6.468	6.633	6.802	6.975	7.153	7.336	7.523	7.716	7.913	8.115	8.323	8.535	8.754	8.977	9.207	9.442	9.683	9.930
7	7.214	7.434	7.662	7.898	8.142	8.394	8.654	8.923	9.200	9.487	9.783	10.089	10.405	10.730	11.067	11.414	11.772	12.141	12.523	12.916
8	8.286	8.583	8.892	9.214	9.549	9.897	10.260	10.637	11.028	11.436	11.859	12.300	12.757	13.233	13.727	14.240	14.773	15.327	15.902	16.499
9	9.368	9.755	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.164	14.776	15.416	16.085	16.786	17.518	18.285	19.086	19.923	20.799
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16.722	17.549	18.420	19.337	20.304	21.321	22.393	23.521	24.709	25.959
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531	19.561	20.655	21.814	23.044	24.349	25.733	27.200	28.755	30.403	32.150
12	12.682	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	22.713	24.133	25.650	27.271	29.001	30.850	32.824	34.931	37.180	39.580
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523	26.211	28.029	29.984	32.088	34.352	36.786	39.404	42.218	45.244	48.496
14	14.947	15.974	17.086	18.292	19.598	21.015	22.550	24.215	26.019	27.975	30.095	32.392	34.882	37.581	40.504	43.672	47.102	50.818	54.841	59.196
15	16.097	17.293	18.599	20.023	21.578	23.276	25.129	27.152	29.361	31.772	34.405	37.280	40.417	43.842	47.580	51.659	56.109	60.965	66.260	72.035
16	17.258	18.639	20.157	21.824	23.657	25.672	27.888	30.324	33.003	35.949	39.190	42.753	46.671	50.980	55.717	60.925	66.648	72.938	79.850	87.442
17	18.430	20.012	21.761	23.697	25.840	28.213	30.840	33.750	36.973	40.544	44.500	48.883	53.738	59.117	65.075	71.673	78.978	87.067	96.021	105.930
18	19.614	21.412	23.414	25.645	28.132	30.905	33.999	37.450	41.301	45.599	50.396	55.749	61.724	68.393	75.836	84.140	93.404	103.739	115.265	128.116
19	20.811	22.840	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.158	56.939	63.439	70.748	78.968	88.211	98.603	110.283	123.412	138.165	154.739
20	22.019	24.297	26.870	29.778	33.066	36.785	40.995	45.762	51.159	57.274	64.202	72.052	80.946	91.024	102.443	115.379	130.031	146.626	165.417	186.687
21	23.239	25.783	28.676	31.969	35.719	39.992	44.865	50.422	56.764	64.002	72.264	81.698	92.468	104.767	118.809	134.840	153.136	174.019	197.846	225.024
22	24.471	27.299	30.536	34.248	38.505	43.392	49.005	55.456	62.872	71.402	81.213	92.502	105.489	120.434	137.630	157.414	180.169	206.342	236.436	271.028
23	25.716	28.845	32.452	36.618	41.430	46.995	53.435	60.893	69.531	79.542	91.147	104.602	120.203	138.295	159.274	183.600	211.798	244.483	282.359	326.234
24	26.973	30.421	34.426	39.082	44.501	50.815	58.176	66.764	76.789	88.496	102.173	118.154	136.829	158.656	184.166	213.976	248.803	289.490	337.007	392.480
25	28.243	32.030	36.459	41.645	47.726	54.864	63.248	73.105	84.699	98.346	114.412	133.333	155.616	181.867	212.790	249.212	292.099	342.598	402.038	471.976
30	34.784	40.567	47.575	56.084	66.438	79.057	94.459	113.282	136.305	164.491	199.018	241.330	293.192	356.778	434.738	530.306	647.423	790.932	966.698	1181.865
35	41.659	49.994	60.461	73.651	90.318	111.432	138.234	172.314	215.705	271.018	341.583	431.658	546.663	693.552	881.152	1120.699	1426.448	1816.607	2314.173	2948.294
40	48.885	60.401	75.400	95.024	120.797	154.758	199.630	259.052	337.872	442.580	581.812	767.080	1013.667	1341.979	1779.048	2360.724	3134.412	4163.094	5529.711	7343.715
45	56.479	71.891	92.718	121.027	159.695	212.737	285.741	386.497	525.840	718.881	986.613	1358.208	1874.086	2590.464	3585.031	4965.191	6879.008	9531.258	13203.105	18280.914
50	64.461	84.577	112.794	152.664	209.341	290.325	406.516	573.756	815.051	1163.865	1668.723	2399.975	3459.344	4994.301	7217.488	10435.449	15088.805	21812.273	31514.492	45496.094

Using the Calculator to Calculate the Future Value of an Annuity

Before you begin, clear the memory, ensure that you are in the *end mode* and your calculator is set for *one payment per year*, and set the number of decimal places that you want (usually two for dollar-related accuracy).

Sample Problem

You want to know what the future value will be at the end of five years if you place five end-of-year deposits of $1000 in an account paying 7% annually. What is your account balance at the end of five years?

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A.2 *(Continued)*

Period	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	40%	45%	50%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.210	2.220	2.230	2.240	2.250	2.260	2.270	2.280	2.290	2.300	2.310	2.320	2.330	2.340	2.350	2.400	2.450	2.500
3	3.674	3.708	3.743	3.778	3.813	3.848	3.883	3.918	3.954	3.990	4.026	4.062	4.099	4.136	4.172	4.360	4.552	4.750
4	5.446	5.524	5.604	5.684	5.766	5.848	5.931	6.016	6.101	6.187	6.274	6.362	6.452	6.542	6.633	7.104	7.601	8.125
5	7.589	7.740	7.893	8.048	8.207	8.368	8.533	8.700	8.870	9.043	9.219	9.398	9.581	9.766	9.954	10.946	12.022	13.188
6	10.183	10.442	10.708	10.980	11.259	11.544	11.837	12.136	12.442	12.756	13.077	13.406	13.742	14.086	14.438	16.324	18.431	20.781
7	13.321	13.740	14.171	14.615	15.073	15.546	16.032	16.534	17.051	17.583	18.131	18.696	19.277	19.876	20.492	23.853	27.725	32.172
8	17.119	17.762	18.430	19.123	19.842	20.588	21.361	22.163	22.995	23.858	24.752	25.678	26.638	27.633	28.664	34.395	41.202	49.258
9	21.714	22.670	23.669	24.712	25.802	26.940	28.129	29.369	30.664	32.015	33.425	34.895	36.429	38.028	39.696	49.152	60.743	74.887
10	27.274	28.657	30.113	31.643	33.253	34.945	36.723	38.592	40.556	42.619	44.786	47.062	49.451	51.958	54.590	69.813	89.077	113.330
11	34.001	35.962	38.039	40.238	42.566	45.030	47.639	50.398	53.318	56.405	59.670	63.121	66.769	70.624	74.696	98.739	130.161	170.995
12	42.141	44.873	47.787	50.895	54.208	57.738	61.501	65.510	69.780	74.326	79.167	84.320	89.803	95.636	101.840	139.234	189.734	257.493
13	51.991	55.745	59.778	64.109	68.760	73.750	79.106	84.853	91.016	97.624	104.709	112.302	120.438	129.152	138.484	195.928	276.114	387.239
14	63.909	69.009	74.528	80.496	86.949	93.925	101.465	109.611	118.411	127.912	138.169	149.239	161.183	174.063	187.953	275.299	401.365	581.858
15	78.330	85.191	92.669	100.815	109.687	119.346	129.860	141.302	153.750	167.285	182.001	197.996	215.373	234.245	254.737	386.418	582.980	873.788
16	95.779	104.933	114.983	126.010	138.109	151.375	165.922	181.867	199.337	218.470	239.421	262.354	287.446	314.888	344.895	541.985	846.321	1311.681
17	116.892	129.019	142.428	157.252	173.636	191.733	211.721	233.790	258.145	285.011	314.642	347.307	383.303	422.949	466.608	759.778	1228.165	1968.522
18	142.439	158.403	176.187	195.993	218.045	242.583	269.885	300.250	334.006	371.514	413.180	459.445	510.792	567.751	630.920	1064.689	1781.838	2953.783
19	173.351	194.251	217.710	244.031	273.556	306.654	343.754	385.321	431.868	483.968	542.266	607.467	680.354	761.786	852.741	1491.563	2584.665	4431.672
20	210.755	237.986	268.783	303.598	342.945	387.384	437.568	494.210	558.110	630.157	711.368	802.856	905.870	1021.792	1152.200	2089.188	3748.763	6648.508
21	256.013	291.343	331.603	377.461	429.681	489.104	556.710	633.589	720.962	820.204	932.891	1060.769	1205.807	1370.201	1556.470	2925.862	5436.703	9973.762
22	310.775	356.438	408.871	469.052	538.101	617.270	708.022	811.993	931.040	1067.265	1223.087	1401.215	1604.724	1837.068	2102.234	4097.203	7884.215	14961.645
23	377.038	435.854	503.911	582.624	673.626	778.760	900.187	1040.351	1202.042	1388.443	1603.243	1850.603	2135.282	2462.669	2839.014	5737.078	11433.109	22443.469
24	457.215	532.741	620.810	723.453	843.032	982.237	1144.237	1332.649	1551.634	1805.975	2101.247	2443.795	2840.924	3300.974	3833.667	8032.906	16579.008	33666.207
25	554.230	650.944	764.596	898.082	1054.791	1238.617	1454.180	1706.790	2002.608	2348.765	2753.631	3226.808	3779.428	4424.301	5176.445	11247.062	24040.555	50500.316
30	1445.111	1767.044	2160.459	2640.881	3227.172	3941.953	4812.891	5873.172	7162.785	8729.805	10632.543	12940.672	15737.945	19124.434	23221.258	60500.207	154105.313	383500.000
35	3755.814	4783.520	6090.227	7750.094	9856.746	12527.160	15909.480	20188.742	25596.512	32422.090	41028.887	51868.563	65504.199	82634.625	104134.500	325394.688	*	*
40	9749.141	12936.141	17153.691	22728.367	30088.621	39791.957	52570.707	69376.562	91447.375	120389.375	*	*	*	*	*	*	*	*
45	25294.223	34970.230	48300.660	66638.937	91831.312	126378.937	173692.875	238384.312	326686.375	447005.062	*	*	*	*	*	*	*	*

*Not shown because of space limitations.

Sharp EL 733A, 735

Inputs:	1000	5	7			
Functions:	PMT	N	i	COMP	FV	
Output:						5750.74*

Hewlett-Packard HP 12C, 17B11, 19B11

Inputs:	1000	5	7			
Functions:	PMT	N	I%YR	FV		
Output:						5750.74*

Casio fx-82AU PLUS or fx-100AU Scientific

Inputs:	1000x(((1.07) x■5►–1)÷0.07)** (or use ^ instead of x■)				
Functions:	1.07 x■5 =	AC Ans–1	AC Ans÷0.07 =	AC Ansx1000***	
Output:					5750.74

* If a minus sign precedes the output, it should be ignored.
** Press ► to move cursor one space to right.
*** Press AC to clear the screen. Press Ans to retrieve the previous calculation.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A.3 Present Value Interest Factors for One Dollar Discounted at *r*% for *n* Periods: $PVIF_{r,n} = \frac{1}{(1+r)^n}$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.887	0.789	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026
21	0.811	0.660	0.538	0.439	0.359	0.294	0.242	0.199	0.164	0.135	0.112	0.093	0.077	0.064	0.053	0.044	0.037	0.031	0.026	0.022
22	0.803	0.647	0.522	0.422	0.342	0.278	0.226	0.184	0.150	0.123	0.101	0.083	0.068	0.056	0.046	0.038	0.032	0.026	0.022	0.018
23	0.795	0.634	0.507	0.406	0.326	0.262	0.211	0.170	0.138	0.112	0.091	0.074	0.060	0.049	0.040	0.033	0.027	0.022	0.018	0.015
24	0.788	0.622	0.492	0.390	0.310	0.247	0.197	0.158	0.126	0.102	0.082	0.066	0.053	0.043	0.035	0.028	0.023	0.019	0.015	0.013
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092	0.074	0.059	0.047	0.038	0.030	0.024	0.020	0.016	0.013	0.010
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057	0.044	0.033	0.026	0.020	0.015	0.012	0.009	0.007	0.005	0.004
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036	0.026	0.019	0.014	0.010	0.008	0.006	0.004	0.003	0.002	0.002
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022	0.015	0.011	0.008	0.005	0.004	0.003	0.002	0.001	0.001	0.001
45	0.639	0.410	0.264	0.171	0.111	0.073	0.048	0.031	0.021	0.014	0.009	0.006	0.004	0.003	0.002	0.001	0.001	0.001	*	*
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009	0.005	0.003	0.002	0.001	0.001	0.001	*	*	*	*

**PVIF* is zero to three decimal places.

Using the Calculator to Calculate the Present Value of a Single Amount

Before you begin, clear the memory, ensure that you are in the *end mode* and your calculator is set for *one payment per year*, and set the number of decimal places that you want (usually two for dollar-related accuracy).

Sample Problem

You want to know the present value of $1700 to be received in eight years, assuming an 8% discount rate.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A.3 *(Continued)*

Period	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	40%	45%	50%
1	0.826	0.820	0.813	0.806	0.800	0.794	0.787	0.781	0.775	0.769	0.763	0.758	0.752	0.746	0.741	0.714	0.690	0.667
2	0.683	0.672	0.661	0.650	0.640	0.630	0.620	0.610	0.601	0.592	0.583	0.574	0.565	0.557	0.549	0.510	0.476	0.444
3	0.564	0.551	0.537	0.524	0.512	0.500	0.488	0.477	0.466	0.455	0.445	0.435	0.425	0.416	0.406	0.364	0.328	0.296
4	0.467	0.451	0.437	0.423	0.410	0.397	0.384	0.373	0.361	0.350	0.340	0.329	0.320	0.310	0.301	0.260	0.226	0.198
5	0.386	0.370	0.355	0.341	0.328	0.315	0.303	0.291	0.280	0.269	0.259	0.250	0.240	0.231	0.223	0.186	0.156	0.132
6	0.319	0.303	0.289	0.275	0.262	0.250	0.238	0.227	0.217	0.207	0.198	0.189	0.181	0.173	0.165	0.133	0.108	0.088
7	0.263	0.249	0.235	0.222	0.210	0.198	0.188	0.178	0.168	0.159	0.151	0.143	0.136	0.129	0.122	0.095	0.074	0.059
8	0.218	0.204	0.191	0.179	0.168	0.157	0.148	0.139	0.130	0.123	0.115	0.108	0.102	0.096	0.091	0.068	0.051	0.039
9	0.180	0.167	0.155	0.144	0.134	0.125	0.116	0.108	0.101	0.094	0.088	0.082	0.077	0.072	0.067	0.048	0.035	0.026
10	0.149	0.137	0.126	0.116	0.107	0.099	0.092	0.085	0.078	0.073	0.067	0.062	0.058	0.054	0.050	0.035	0.024	0.017
11	0.123	0.112	0.103	0.094	0.086	0.079	0.072	0.066	0.061	0.056	0.051	0.047	0.043	0.040	0.037	0.025	0.017	0.012
12	0.102	0.092	0.083	0.076	0.069	0.062	0.057	0.052	0.047	0.043	0.039	0.036	0.033	0.030	0.027	0.018	0.012	0.008
13	0.084	0.075	0.068	0.061	0.055	0.050	0.045	0.040	0.037	0.033	0.030	0.027	0.025	0.022	0.020	0.013	0.008	0.005
14	0.069	0.062	0.055	0.049	0.044	0.039	0.035	0.032	0.028	0.025	0.023	0.021	0.018	0.017	0.015	0.009	0.006	0.003
15	0.057	0.051	0.045	0.040	0.035	0.031	0.028	0.025	0.022	0.020	0.017	0.016	0.014	0.012	0.011	0.006	0.004	0.002
16	0.047	0.042	0.036	0.032	0.028	0.025	0.022	0.019	0.017	0.015	0.013	0.012	0.010	0.009	0.008	0.005	0.003	0.002
17	0.039	0.034	0.030	0.026	0.023	0.020	0.017	0.015	0.013	0.012	0.010	0.009	0.008	0.007	0.006	0.003	0.002	0.001
18	0.032	0.028	0.024	0.021	0.018	0.016	0.014	0.012	0.010	0.009	0.008	0.007	0.006	0.005	0.005	0.002	0.001	0.001
19	0.027	0.023	0.020	0.017	0.014	0.012	0.011	0.009	0.008	0.007	0.006	0.005	0.004	0.004	0.003	0.002	0.001	*
20	0.022	0.019	0.016	0.014	0.012	0.010	0.008	0.007	0.006	0.005	0.005	0.004	0.003	0.003	0.002	0.001	0.001	*
21	0.018	0.015	0.013	0.011	0.009	0.008	0.007	0.006	0.005	0.004	0.003	0.003	0.003	0.002	0.002	0.001	*	*
22	0.015	0.013	0.011	0.009	0.007	0.006	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.002	0.001	0.001	*	*
23	0.012	0.010	0.009	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002	0.002	0.001	0.001	0.001	*	*	*
24	0.010	0.008	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002	0.002	0.001	0.001	0.001	0.001	*	*	*
25	0.009	0.007	0.006	0.005	0.004	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	*	*	*
30	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.001	*	*	*	*	*	*	*	*	*	*
35	0.001	0.001	0.001	0.001	*	*	*	*	*	*	*	*	*	*	*	*	*	*
40	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
50	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

* *PVIF* is zero to three decimal places.

Sharp EL 733A, 735

Inputs:	1700	8	8			
Functions:	FV	N	i	COMP	PV	
Output:						918. 46*

Hewlett-Packard HP12C, 17B11, 19B11

Inputs:	1700	8	8			
Functions:	FV	N	I%YR	PV		
Output:						918.46*

Casio fx-82AU PLUS or fx-100AU Scientific

Inputs:	1700÷1.08 x■8		(or use ^ instead of x■)			
Functions:	1.08 x■8 =		AC 1700÷Ans =			
Output:						918.46

* If a minus sign precedes the output, it should be ignored.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A.4 Present Value Interest Factors for a One Dollar Annuity Discounted at *r*% for *n* Periods:

$$PVIFA_{r,n} = \sum_{t=1}^{n} \frac{1}{(1+r)^t}$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	7.652	7.326	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.013	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.560	8.061	7.606	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	17.226	15.679	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	18.046	16.352	14.878	13.590	12.462	11.470	10.594	9.818	9.129	8.514	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870
21	18.857	17.011	15.415	14.029	12.821	11.764	10.836	10.017	9.292	8.649	8.075	7.562	7.102	6.687	6.312	5.973	5.665	5.384	5.127	4.891
22	19.661	17.658	15.937	14.451	13.163	12.042	11.061	10.201	9.442	8.772	8.176	7.645	7.170	6.743	6.359	6.011	5.696	5.410	5.149	4.909
23	20.456	18.292	16.444	14.857	13.489	12.303	11.272	10.371	9.580	8.883	8.266	7.718	7.230	6.792	6.399	6.044	5.723	5.432	5.167	4.925
24	21.244	18.914	16.936	15.247	13.799	12.550	11.469	10.529	9.707	8.985	8.348	7.784	7.283	6.835	6.434	6.073	5.746	5.451	5.182	4.937
25	22.023	19.524	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077	8.422	7.843	7.330	6.873	6.464	6.097	5.766	5.467	5.195	4.948
30	25.808	22.396	19.601	17.292	15.373	13.765	12.409	11.258	10.274	9.427	8.694	8.055	7.496	7.003	6.566	6.177	5.829	5.517	5.235	4.979
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.644	8.855	8.176	7.586	7.070	6.617	6.215	5.858	5.539	5.251	4.992
40	32.835	27.356	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779	8.951	8.244	7.634	7.105	6.642	6.233	5.871	5.548	5.258	4.997
45	36.095	29.490	24.519	20.720	17.774	15.456	13.606	12.108	10.881	9.863	9.008	8.283	7.661	7.123	6.654	6.242	5.877	5.552	5.261	4.999
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915	9.042	8.304	7.675	7.133	6.661	6.246	5.880	5.554	5.262	4.999

Using the Calculator to Calculate the Present Value of an Annuity

Before you begin, clear the memory, ensure that you are in the *end mode* and your calculator is set for *one payment per year*, and set the number of decimal places that you want (usually two for dollar-related accuracy).

Sample Problem

You want to know what the present value will be of an annuity of $700 per year at the end of each year for five years, given a discount rate of 8%.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

TABLE A.4 *(Continued)*

Period	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	40%	45%	50%
1	0.826	0.820	0.813	0.806	0.800	0.794	0.787	0.781	0.775	0.769	0.763	0.758	0.752	0.746	0.741	0.714	0.690	0.667
2	1.509	1.492	1.474	1.457	1.440	1.424	1.407	1.392	1.376	1.361	1.346	1.331	1.317	1.303	1.289	1.224	1.165	1.111
3	2.074	2.042	2.011	1.981	1.952	1.923	1.896	1.868	1.842	1.816	1.791	1.766	1.742	1.719	1.696	1.589	1.493	1.407
4	2.540	2.494	2.448	2.404	2.362	2.320	2.280	2.241	2.203	2.166	2.130	2.096	2.062	2.029	1.997	1.849	1.720	1.605
5	2.926	2.864	2.803	2.745	2.689	2.635	2.583	2.532	2.483	2.436	2.390	2.345	2.302	2.260	2.220	2.035	1.876	1.737
6	3.245	3.167	3.092	3.020	2.951	2.885	2.821	2.759	2.700	2.643	2.588	2.534	2.483	2.433	2.385	2.168	1.983	1.824
7	3.508	3.416	3.327	3.242	3.161	3.083	3.009	2.937	2.868	2.802	2.739	2.677	2.619	2.562	2.508	2.263	2.057	1.883
8	3.726	3.619	3.518	3.421	3.329	3.241	3.156	3.076	2.999	2.925	2.854	2.786	2.721	2.658	2.598	2.331	2.109	1.922
9	3.905	3.786	3.673	3.566	3.463	3.366	3.273	3.184	3.100	3.019	2.942	2.868	2.798	2.730	2.665	2.379	2.144	1.948
10	4.054	3.923	3.799	3.682	3.570	3.465	3.364	3.269	3.178	3.092	3.009	2.930	2.855	2.784	2.715	2.414	2.168	1.965
11	4.177	4.035	3.902	3.776	3.656	3.544	3.437	3.335	3.239	3.147	3.060	2.978	2.899	2.824	2.752	2.438	2.185	1.977
12	4.278	4.127	3.985	3.851	3.725	3.606	3.493	3.387	3.286	3.190	3.100	3.013	2.931	2.853	2.779	2.456	2.196	1.985
13	4.362	4.203	4.053	3.912	3.780	3.656	3.538	3.427	3.322	3.223	3.129	3.040	2.956	2.876	2.799	2.469	2.204	1.990
14	4.432	4.265	4.108	3.962	3.824	3.695	3.573	3.459	3.351	3.249	3.152	3.061	2.974	2.892	2.814	2.478	2.210	1.993
15	4.489	4.315	4.153	4.001	3.859	3.726	3.601	3.483	3.373	3.268	3.170	3.076	2.988	2.905	2.825	2.484	2.214	1.995
16	4.536	4.357	4.189	4.033	3.887	3.751	3.623	3.503	3.390	3.283	3.183	3.088	2.999	2.914	2.834	2.489	2.216	1.997
17	4.576	4.391	4.219	4.059	3.910	3.771	3.640	3.518	3.403	3.295	3.193	3.097	3.007	2.921	2.840	2.492	2.218	1.998
18	4.608	4.419	4.243	4.080	3.928	3.786	3.654	3.529	3.413	3.304	3.201	3.104	3.012	2.926	2.844	2.494	2.219	1.999
19	4.635	4.442	4.263	4.097	3.942	3.799	3.664	3.539	3.421	3.311	3.207	3.109	3.017	2.930	2.848	2.496	2.220	1.999
20	4.657	4.460	4.279	4.110	3.954	3.808	3.673	3.546	3.427	3.316	3.211	3.113	3.020	2.933	2.850	2.497	2.221	1.999
21	4.675	4.476	4.292	4.121	3.963	3.816	3.679	3.551	3.432	3.320	3.215	3.116	3.023	2.935	2.852	2.498	2.221	2.000
22	4.690	4.488	4.302	4.130	3.970	3.822	3.684	3.556	3.436	3.323	3.217	3.118	3.025	2.936	2.853	2.498	2.222	2.000
23	4.703	4.499	4.311	4.137	3.976	3.827	3.689	3.559	3.438	3.325	3.219	3.120	3.026	2.938	2.854	2.499	2.222	2.000
24	4.713	4.507	4.318	4.143	3.981	3.831	3.692	3.562	3.441	3.327	3.221	3.121	3.027	2.939	2.855	2.499	2.222	2.000
25	4.721	4.514	4.323	4.147	3.985	3.834	3.694	3.564	3.442	3.329	3.222	3.122	3.028	2.939	2.856	2.499	2.222	2.000
30	4.746	4.534	4.339	4.160	3.995	3.842	3.701	3.569	3.447	3.332	3.225	3.124	3.030	2.941	2.857	2.500	2.222	2.000
35	4.756	4.541	4.345	4.164	3.998	3.845	3.703	3.571	3.448	3.333	3.226	3.125	3.030	2.941	2.857	2.500	2.222	2.000
40	4.760	4.544	4.347	4.166	3.999	3.846	3.703	3.571	3.448	3.333	3.226	3.125	3.030	2.941	2.857	2.500	2.222	2.000
45	4.761	4.545	4.347	4.166	4.000	3.846	3.704	3.571	3.448	3.333	3.226	3.125	3.030	2.941	2.857	2.500	2.222	2.000
50	4.762	4.545	4.348	4.167	4.000	3.846	3.704	3.571	3.448	3.333	3.226	3.125	3.030	2.941	2.857	2.500	2.222	2.000

Sharp EL 733A, 735

Inputs: 700 | 5 | 8

Functions: PMT | N | i | COMP | PV

Output: 2794.90*

Hewlett-Packard HP 12C, 17B11, 19B11

Inputs: 700 | 5 | 8

Functions: PMT | N | I%YR | PV

Output: 2794.90*

Casio fx-82AU PLUS or fx-100AU Scientific

Inputs: 700x((1–(1÷1.08 x■5▶))÷0.08)** or 700x((1–1.08 x■–5)÷0.08) or (or use ^ instead of x■)

Functions: 1.08 x■5= AC 1÷Ans = AC 1–Ans = AC Ans÷0.08= AC Ansx700***

Output: 2794.90

* If a minus sign precedes the output, it should be ignored.
** Press ▶ to move cursor one space to right.
*** Press AC to clear the screen. Press Ans to retrieve the previous calculation.

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Index

Page numbers in *italics* indicate figures. Page numbers in **bold** indicate the definition of a key term.

AASE *see* Australian Associated Stock Exchanges
ABS *see* asset-backed securities
accounts receivable turnover, 226
accumulation of wealth
  use of managed funds, 409
active investment management, 19
active portfolio management, **437**
activity ratios, 226–7
  defined, **226**
aftermarkets *see* secondary markets
aggressive growth funds, **400**
aggressive share management, 199
Akerlof, George, 337
All Ordinaries Share Price Index, *65*
alternative investment vehicles, information on, *57*
American options, 469
analytical information, **55**
annual compounding, 361–2
  yield-to-maturity, 364
annuities
  defined, **124**
  future value, 124–5
  present value, 128
appreciation, currency, 34
arbitration, **75**
Arms Index, 301
ASIC *see* Australian Securities and Investments Commission
ask price, **30**
ASP *see* Australian Share Portfolio Fund
asset allocation, **428**
  alternative behaviours, 429
  schemes, 427–30
    application, 430
    development, 428–30
  see also investments, selection
asset allocation funds, 404–5
  defined, **404**, **430**
asset-backed securities (ABS), **336**
asset returns, *436*
ASX *see* Australian Securities Exchange
attainable set of portfolios, 151, *152*
Australian Associated Stock Exchanges (AASE), 28
Australian Financial Review, **57**
  indices of investment performance, 432
  security quotations, 60, 270
  source of
    financial information, 33
    investment data, 431
Australian investment fund assets, 391, *392*
Australian Securities Exchange (ASX), 25, 28–9
  All Ordinaries Share Price Index, *65*
  Business Rules, *67*
  history, 28
  indices, 64–6
  interest rate market, 29
  listing policies, 29
  share quotes, 181
  trading activity, 29
  see also Securities Exchanges Guarantee Corporation
Australian Securities and Investments Commission (ASIC), **26**
  and managed funds, 395
Australian Share Portfolio Fund (ASP), 150
automatic investment plans, 406–7
  defined, **406**
automatic reinvestment plans, **407**
average market multiple, 252–3
average weekly earnings, 214
averages, 62–6
  defined, **62**

back-office research reports, **60**
balance sheets, **221**, *222*
balance of trade, 214
balanced funds, 400–1, 405
  defined, **400**
banking *see* commercial banking; investment banking
bar charts, **304**
bear markets, **31**, 175
behavioural finance, 289–94
  defined, **289**
  implications for security analysis, 294
  use to improve investment results, 295
belief perseverance, 294
Bendigo Managed Funds Update, *412*
Berkshire Hathaway, 426
beta
  application, 146–7
  defined, **144**
  derivation, 144–5
  graphical derivation, *145*
  interpretation, 145–8
  measure of risk, 144–7
  portfolio management, 152–5
    defined, **153**
    interpretation, 154–5
  portfolios, calculation, 153–4
  use to estimate return, 147–9
    equation, 147–8
  see also portfolios, betas
bid price, **30**
Black, Fisher *see* Black-Scholes option-pricing model
Black-Scholes option-pricing model, 478–9
blue-chip shares, **190**
bond-equivalent yield, **365**
bond ladders, **378**
bond markets, 332–4
  globalisation, 337–8
  historical returns, 322, *324*
  indicators, 66
  performance, 322–5
  segments, 334–5
bond portfolio immunisation, 373, 375–7
bond swaps, 378–9
  defined, **378**
bond yields, **66**
  measurement, 363–7
bonds, **9**
  call features, 329
  compared with shares, 322–5
  defined, **321**
  duration *see* duration
  expected return, 368–9
  features, 326–32
  hedging, 515
  interest, 326–7
  interest rates, 322, *323*
  investment strategies, 377–9
  as investments, 321–6
  performance, 433–4
  prices, 360–3
    behaviour, 327–9, *328*
    forecasting, 378
    related to interest rates, 321, 322
    related to market yields, 360
  principal, 326–7
  ratings, 330–2
    defined, **330**

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

bonds *(continued)*
required rate of return, 360
returns, 177, *178*
risks, 325–6, 370
speciality issues, 335
stability, 325
swaps, 378–9
valuation, 353–80
annual compounding, 361–2
basic model, 360–1
current yield, 363
procedure, 369
semi-annual compounding, 362–3
yield-to-call, 366–7
yield-to-maturity, 364–6
volume in Australia, *333*
vs Australian shares, 369
yield curves, 357–60
plotting, 358
types, *357*, 358
use in investment decisions, 359–60
yield spread, 322
yields
defined, **378**
measurement, 363–7
book value, 182–3
defined, **182**
and estimation of EPS, 253
book value per share, 233
books close date, **185**
broad markets, 105
brokerage reports, 60
brokerage services, 67
types, 67–8
bubbles *see* share bubbles
budget deficits, 216
budget surpluses, 216
Buffett, Warren, 426
bull markets, **31**
business cycles, 14
defined, **213**
and economic analysis, 212–13
business periodicals, 58
business risk, **103**
bonds, 325
busted convertibles, 342
buy-and-hold strategy, 198
bonds, 377
compared with short-term trading, 286

calculators *see* financial calculators
calendar effects, 287
call features, 329–30
defined, **329**
call options, 467–73
buyers, 468
contracts, 467–8
defined, **467**
features, 467–9
in-the money, 475
out-of-the-money, 475
in practice, 468–9
profit potential, 473–4
sellers, 468
speculation, 480
transactions, 471–2
call premium, **329**
call price, **329**
call risk, 325–6
calls, **467**
see also call options
capital appreciation funds *see* aggressive growth funds
capital asset pricing model (CAPM), 144–9, 152
assessment, 148–9
beta, 144–9
equation, 147–8
use, 147–9
definition, **147**
estimation of required return, 147–8, 258
graph, 148
and small-firm effect, 288
capital gains, **8**, 89–90
portfolio performance, 439–40
capital growth objective, 427
capital losses, 89–90, 96
capital markets, **26**
capital preservation objective, 427, 428
CAPM *see* capital asset pricing model
careers in finance, 17–19
cash accounts, **69–70**
cash dividends, **186**
cash markets, **498**
cash-realisation ratios, 224
CBOT *see* Chicago Board of Trade
CFD *see* contracts for difference
chart formations, 305–6
charting, 53, *54*, 303–7
defined, **303**
Chi-X Australia, 25
Chicago Board of Trade (CBOT), 500
auction market, *501*
Chicago Mercantile Exchange (CME), 500
churning, **69**
classified shares, 180–1
defined, **180**
CME *see* Chicago Mercantile Exchange
collateral trust bonds, 330
commercial banking careers, 17–18
commissions, 74
commodities futures, 503–8
characteristics, 503–6
contracts, 504
as hedging vehicles, 507
portfolio management, 507–8
price behaviour, 504–5
quotations, *505*
trading, 506–7
commodities trading *see* commodities futures
common-size income statements, **249**
Commonwealth Managed Investments Act, 1998, 395
CommSec website, *51*
companies
information, 57
sources, 58–60
valuation, 249–55
function of future returns, 249
comparative data sources, 58
competition, analysis, 236–7
compound interest, 100–1, 120–2
defined, **120**
conciliation, **75**
conflict of interest, share analysts, 260
constant-dollar plans, 446–7
defined, **446**
constant-growth model, 261–4
application, 262–4
constant-ratio plans, 447–8
defined, **447**
Consumer and Competition Act 2010, 36
consumer price inflation, *356*
consumer prices, 214
continuous compounding, **121**
contracts for difference (CFD), **490**
contractual instruments, 467
contrary opinion theory, **299**
conventional options, **470**
conversion equivalent, **343**
conversion parity, **343**
conversion period, **341**
conversion premium, 343–4
defined, **343**
conversion price, **341**
conversion privileges
convertible securities, 340–1
defined, **340**
managed funds, 407–8
defined, **407**
conversion ratio, **341**
conversion value, **343**
convertible bond funds, 402
convertible securities, **9**, 339–45
bonds, 339–45
defined, **339**
features, 340
as investment outlets, 339–42
sources of value, 342
valuation, 342–5
conversion privileges, 340–1
defined, **340**
LYONs, 341–2
measurement of value, 342
notes, 340
preference shares, 339
corporate bonds, 334–5
defined, **334**
corporate debenture funds, 402
corporate finance, 18
corporate profits, 216
Corporations Act 2001, 35
investor protection, 74
licensing of stockbrokers, 66–7
correlation, **136**
as a statistical measure, 136–7
correlation coefficient, **137**
coupons, **326**
covered options, **484**
credit spreads, **322**, **354**
currency appreciation, 34
currency exchange rate, **34**
influence on share prices, 216
and return on foreign shares, 197
currency exchange risk, **34**
currency options, **489**

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

current income objective, 198, 427
current ratio, 225
current yield, **326**, **363**
  and return on shares, 433
cyclical shares, **192**

D&E approach *see* dividends-and-earnings (D&E) approach
date of record, **185**
day orders, 70
day traders, **73**
day trading, 73
DCF approach *see* dividends-and-earnings (D&E) approach
dealers, **30**
  role, 30
debt
  defined, **4**
  types of investments, **4**
debt-equity ratio, 227–8
debt securities market, 332–4
decision making *see* investments, selection
decline phase of growth cycles, 218
defensive shares, **192**
deferred call bonds, 329
deferred equity, **340**
deflation, **92**
delivery month, **498**
demanders, *5*, *6*
depreciation, currency, 34
derivative securities, **4**, 10, **467**
descriptive information, **55**
direct investment, 3–4
  defined, **4**
  foreign securities, 33
discount basis, **16**
discount bonds, **327**
discount brokers, **67**
discount rate, **125**
diversifiable risk, **144**
  related to return, 152
diversification, **12**, 137–41
  and foreign investments, **32**
  international investment, 141–3
    benefits, 143
    effectiveness, 141–2
    methods, 142–3
  negatively correlated assets, 137, *138*
  risk, 153
dividend payout ratio, **187**
dividend reinvestment plans (DRPs), 187–9
  defined, **187**
dividend valuation model (DVM), 260–7
  constant growth, 261–4
    application, 262–4
  defined, **260**
  defining expected growth rate, 266–7
  variable growth, 261, 264–6
    application, 265–6
    compared with D&E approach, 268
  zero growth, 260, 261
dividend yield, 186–7, 433
  defined, **186**
dividends, **8**, 183–9
  decision making, 184–6
    corporate vs market factors, 184–*5*
  importance, 438
  important dates, 185–6
  portfolio performance, 438–9
  types, 186–7
  yield, 186–7, 433
    defined, **186**
dividends-and-earnings (D&E) approach
  compared with variable-growth DVM, 268
  defined, **267**
  dividend valuation, 267–9
  variation of DVM, 269
dividends per share, 232
DJIA *see* Dow Jones Industrial Average
documentation, 67
dollar-cost averaging, 445–6
  defined, **445**
domestic investments, **5**
domestic-pay bonds, 337–8
Dow Jones averages, 62
Dow Jones Industrial Average (DJIA), 62–4, 296
  definition, **62**
Dow theory, 296–7
  defined, **296**
  operation, *297*
DRPs *see* dividend reinvestment plans
duration, 370–7
  calculation, *372*
  as a concept, 370–1
  defined, **370**
  measurement, 371–3
    portfolios, 373
    single bonds, 372–3
  and price volatility, 373–4
  uses, 375–7
DVM *see* dividend valuation model

earnings per share (EPS), **184**
  estimation, 253–4
economic analysis, 212–16
  and business cycles, 212–13
  defined, **212**
  key factors, 213–14
economic and current event information sources, *57*–8
  as type of information, *57*
economic factors
  impact on
    interest rates, *357*
    share prices, 215
  investment performance, 431–2
effective duration, 374–*5*
efficient frontier, 151–2
  defined, **151**
efficient market hypothesis (EMH), 211, 283, 284–7
  defined, **284**
  semi-strong form, 285–6
  strong form, 286
  weak form, 285
efficient markets, 284–9
  defined, **284**
efficient portfolios, **134**
electronic spreadsheets, 123
  use in computation, 93
  see also specific calculations, e.g. present value
EMH *see* efficient market hypothesis
employment *see* unemployment
entry fees
  managed funds, 397–8
    factor in selection, 412–13
EPS *see* earnings per share
equipment trust certificates, 330
equity, types of investments, **4**
equity capital, **178**
equity-income funds, **400**
equity kicker, **339**
equity markets, comparative annual returns, 194, *195*
equity returns *see* level of return
equity risk premiums, 322, *324*
ETFs *see* exchange traded funds
ethical funds, 404
ethical investing, 445
ethics, **36**
  backdating of options, 476
  collapse of Storm Investing, 15
  fraudulent accounting, 225
  Martha Stewart case, 68
  share analysts, 260
Eurodollar bonds, **338**
European options, 469
European Union, and globalisation of markets, 32
event risk, **105**
ex-dividend date, **186**
excess margins, **40**
exchange rate *see* currency exchange rate
exchange traded funds (ETFs), 397–9
  options, 489
exit fees
  managed funds, 397–8
    factor in selection, 412–13
expectations hypothesis, **358**
expected growth rate, defining, 266–7
expected inflation premium, **95**
expected return, 90–1
  bonds, 368–9
    defined, **368**
  compared with YTM, 368
  defined, **90**
  determination, 269–70
expiration date, **471**

feasible set of portfolios, 151, *152*
fees *see* commissions
female investors, 290
fill-or-kill orders, 70
financial assets, 467
financial calculators, *52*, *53*, 122–3
  use in computation, 93
    see also specific calculations, e.g., present value
financial futures, 509–17
  on the ASX, 510
  contract specifications, 510
  defined, **509**
  market, 509–13
  portfolio management, 515

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

financial futures *(continued)*
pricing
bank bills, 512–13
Treasury bonds, 512–13
quotations, *511*
speculation, 513
trading, 513–14
financial institutions, **5**
financial journals, 57
financial leverage, **37**
financial markets, **5**
Financial Ombudsman Service (FOS), 75
financial planning careers, 18
financial ratios, 224–33
activity ratios, 226–7
leverage measures, 227–8
measurement of liquidity, 224–6
per share ratios, 231–3
profitability measurement, 228–30
uses, 224
financial risk, **103**
bonds, 325
financial statements, 220–4
fiscal policies, 213
fixed-commission schedules, **74**
fixed-income securities, **9**, 320–45
Australia, *355*
fixed-interest funds, 401–2
defined, **401**
fixed-weightings approach
asset allocation schemes, **428**
flexible-weightings approach
asset allocation schemes, **429**
forced conversion, **340**
forecasted interest rate approach to investment, 378–9
forecasted performance
dividends, 251–5
net profit margin, 250
profits, 249–51
sales, 249–51
share price, 251–5
foreign exchange options, 489
foreign investments, **5**
managed funds, 405–6
performance, 33
risks, 33–5
see also foreign shares
foreign-pay bonds, 338
foreign securities, 33
foreign shares, 194–7
returns, 194, *195*
measurement, 196
formula plans, 445–9
constant-dollar plans, 446–7
constant-ratio plans, 447–8
defined, **445**
dollar-cost averaging, 445–6
variable ratio plans, 448–9
FOS *see* Financial Ombudsman Service
fraudulent accounting, 225
freely callable bonds, 329
full-service brokers, **67**
fully compounded rate of return, **101**, 104
fund families, **408**
fundamental analysis, 211, 219–37
company analysis phase, 220
defined, **219**
essentials, 220
financial ratios, 224–33
activity ratios, 226–7
leverage measurement, 227–8
liquidity measurement, 224–6
per share ratios, 231–3
profitability measurement, 228–30
use, 224
interpretation of data, 233–7, 235
use of
balance sheets, 221
financial statements, 220–4
income statements, 221
statements of cash flows, 221–4
future price, 255–7
future value, 123–5
annuities, 124–5
calculation, 123–4
defined, **123**
futures, **10**, 497–518
commodities *see* commodities futures
contracts, 498–9
compared with options, 499
defined, **498**
farm crops, 499
exchanges, 499–500
financial *see* financial futures
margin trading, 502–3
markets, 498–503
defined, **498**
structure, 498–500
trading, 500–3
measurement of returns, 434–5
options, 515–16
defined, **515**
trading
growth, 498
mechanisms, 500–2
futures contracts *see* futures, contracts
futures exchanges, 29–30
futures markets *see* futures, markets
futures options, 515–16
defined, **515**

GDP *see* gross domestic product
general purpose money funds, 402
global financial crisis
impact on share prices, 175
and short selling, 300
global returns *see* foreign shares, returns
globalisation, securities markets, 32–5
good-till-cancelled (GTC) orders, 70
government bond funds, 401
government publications, 58
government securities funds, 402
gross domestic product (GDP), 213, 214
growth, 216
growth cycles, **218**
growth funds, **399**
growth-and-income funds, **401**
growth investors, 259
growth-oriented portfolios, **134**
historical outcomes, *436*
growth rates, 101
calculation, 101–2
growth shares, **191**
GTC (good-till-cancelled) orders, 70

hedge funds, **10**
hedgers, **500**
hedges, defined, **481**
hedging, 481–3
international funds, 406
hedging vehicles
commodities futures, 507
interest-rate futures, 515–16
market-index futures, 514–15
share index options, 487–8
high-grade corporate debenture funds, 402
high-risk investments, 5
historical returns, 90, 92
as guide to future performance, 140
international comparison, 92
managed funds, 411–12
related to risk, 107–8
historical standards, 235–6
holders of record, 186
holding period, **96**
holding period return (HPR), 96–8
computation, 97–8
defined, **97**
measurement of returns, 196, 432–5
bonds, 433–4
futures, 434–5
managed funds, 416–17, 434
options, 434–5
shares, 433
portfolios, 440–1
use in investment decisions, 98
housing approvals, 214
HPR *see* holding period return

ILBs *see* inflation-linked bonds
immunisation, 373, 375–7
defined, **375**
in-the-money call options, **475**
compared with out-of-the-money call options, 480
income, **89**
as a component of return, 90
income bonds, **330**
income distributions
defined, **415**
managed funds, 415
income-oriented portfolios, **134**
income shares, 190–1
defined, **190**
income statements, **221**, *223*
index funds, **403**
index options *see* share index options
index price, **512**
bank bills, 512
Treasury bonds, 512
indices, 62–6, **62**
Australia, *63*
indirect investment, **4**
foreign securities, 33
individual investors, **6–7**
industrial production, 216
industries, growth cycles, 218

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

industry analysis, 211, 217–19
  defined, **217**
  key issues, 217–18
industry information, *57*
  sources, 58–60
industry rate risk, aspects, 104
industry standards, 235–6
inflation, **92**
  influence on returns, 92
  related to P/E multiples, 251
inflation-linked bonds (ILBs), 356
initial margin deposits, **502**
initial margins, **39**
initial public offerings (IPOs), **26**, 193
  of managed funds, 414
insider trading, **36**
instalment warrants, 181
institutional investors, **7**
institutional news, *58*
insurance careers, 18–19
interest, 120–1, **120**
  reinvestment, 100–1
  short-term investments, 16
interest rate futures, **509**
  as hedging vehicles, 515
  short positions, 513–14
interest rate options, **489**
interest rate risk
  bonds, 325
  defined, **104**
interest rates, 216
  behaviour, trading on, 378–9
  bonds, 322, *323*
  impact on bond prices, 321, 322
  term structures, 358–9
  trends (1998-2010), *323*
  see also market interest rates
internal rate of return *see* yield
international balance of trade, 214
international diversification, 141–3
  benefits, 143
  effectiveness, 141–2
  methods, 142–3
international funds, 405–6
  defined, **405**
international investments *see* foreign investments
international markets, 32
Internet, effective use, *53–5*
intrinsic value, **210**
inventory turnover, 226–7
investing *see* investment
investment
  educational websites, 50–2
  environment, 2–21
  ethics *see* ethics
  goals, **11–12**
    and sale of investments, 450–1
    selection of managed funds, 410
  life cycle stages, 13–14
  plans, 11–15
    adoption, 11
    defined, **12**
  process, 3
    structure, *5–7*
  steps, 11–12
  strategies, 197–9
    bonds, 377–9
  tools, *52–3*
  see also online investing
investment advisers, **76**
  fees, 76–7
  regulation, 76
  use, 76–7
investment banking careers, 19
investment clubs, **77**
investment fund assets, Australia, 391, *392*
investment grade bonds, 331
investment horizons, 253
investment letters, **60**
investment management careers, 19
investment value, 344–5
  defined, **183**, **344**
investments
  defined, **3**
  information, 55–61
    sources, 57–60
    types, *57*
  performance evaluation, 431–7
    comparison with investment goals, 435–6
    indices, 432
    measures, 432–5
  selection, 12
    combining risk and return, 109–10
    related to age, 405
  types, 3–5, 8
  vehicles, 7–11
    evaluation, 12
    financial variables, 97
    risk-return characteristics, 108
investor confidence indices, 298
investor services, 406–7
investors, 6–7
  behaviour, effect on security prices, 290
  characteristics, and portfolio construction, 427
  protection, 74–5
  risk profiles, 109
IPOs *see* initial public offerings

Jensen's measure (Jensen's alpha), **443**
joint brokerage accounts, *69*
junk bonds, 336–7
  defined, **336**

large-cap shares, **192**
lemons problem, 337
LEPOs (low exercise price options), **490**
level of return, 91–2
  Australia, 91
  external forces, 91–2
  internal characteristics, 91
leverage, **468**
leverage measures, 227–8
  defined, **227**
limit orders, 70–1, 449
  defined, **70**
liquid yield option notes (LYONs), 341–2
  defined, 341
liquidity, **8**
  measurement, 224–6
  measures, **224**
  and short-term investments, 15–17
  warehousing, 450
liquidity preference theory, **358**
liquidity risk, 104–5, **104**
  bonds, 325
listed funds, 396–7
  compared with unlisted funds, 413–14
  defined, **396**
  returns, 418–19
  selection criteria, 414
listed options, **470**
  development of strategies, 483–6
    writing options, 483–5
  quotations, *472*
listing policies
  ASX, 29
  Nasdaq, 30–1
long positions, 36–7
  futures trading, 501
long purchase, **36**
  type of transaction, 36–7
long straddles, 486
long-term bond funds, 402
long-term bonds, 335
long-term investments, **5**
long-term returns, managed funds, 418
loss aversion, **291**
low exercise price options (LEPOs), **490**
low-risk investments, *5*
LYONs (liquid yield option notes), 341–2
  defined, **341**

Macaulay duration, 371
managed fund cash ratio, 301
managed funds, 9–10, 390–419
  access to data, 417
  Australian assets, 391, *392*
  defined, **9**, **391**
  essential characteristics, 395–7
  fees and charges, 398–400
  future performance, 416
  important facts, 409
  income distribution, 415
  investment objectives, 410–11
  investment process, 408–19
  organisation and management, 394–5
  overview, 391–5
  performance, 393, *396*, 434
    measurement, 414–19
  pros and cons, 393–4
  realised capital gains, 415–16
  regulation, *395*
  returns
    with capital gains, 417
    listed funds, 418–19
    long-term, 418
    measures, 416–17
    with reinvested dividends, 417
  risks, 419
  selection, 410–14
  sources of return, 415–16
  as storehouses of value, 409

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

managed funds *(continued)*
taxation, 398
trust deeds, 395
types, 399–406
uses, 409
management fees, **393**, 411
margin accounts, **70**
margin calls, **39**, 41
futures trading, 502
margin loans, **39**
in Australia, 39
margin trading, **37**
day traders, 73
essential features, 37–9
futures, 502–3
process, 39
pros and cons, 38–9
returns, 40
risks, 37, 41
and security returns, *38*
type of transaction, 37–41
uses, 40–1
market activity
indices, 62–3, 296
and investment performance, 431–2
market-index futures, 509–10
defined, **509**
as hedging vehicles, 514–15
trading, 514
market interest rates, 354–60
causes of movement, 356–7
monitoring, 354–5
market muscle, 182
market orders, **70**, 71
market price, *5*
market ratios, **231**
market returns, **144**
market risk, **105**
bonds, 370
market segmentation theory, **359**
market technicians, **300**
market timing, 378
market value, **183**
market volume, 298
markets
anomalies, 287–9
defined, **287**
possible explanations, 288–9
breadth, 298
efficiency, 284–9
levels, 284–7
globalisation, 32–5
measurement, 296–7
technical conditions, 298–300
volume of trade, 298
see also types of market, e.g. bear markets, futures markets
marking-to-market, 502–3
defined, **502**
maturity date, **327**
mediation *see* conciliation
Melbourne Cup effect, 289
mid-cap shares, 192–3
defined, **192**
minimum margins, **502**
mixed streams, **126**
calculation of present value, 127
modern portfolio theory (MPT), 133, 151–5
compared with traditional, 150–6
defined, **151**
reconciliation with modern approach, 155–6
modified duration, 374
momentum anomaly, 288
money funds, 402–3
defined, **402**
see also money market managed funds
money market managed funds, 402–3
defined, **10**, **402**
warehousing liquidity, 450
money markets, **26**
money supply, 216
and interest rates, 356
mortgage-backed bonds, **336**
mortgage-backed funds, 402
mortgage-backed securities, 336
mortgage bonds, **330**
Motley Fool website, 49
moving averages (MAs), 306–7
defined, **307**
MPT *see* modern portfolio theory

naked options, **484**
narrow framing, 294
Nasdaq, 30–1, **30**
listing standards, 30–1
Nasdaq Global Select Market, 30–1
National Guarantee Fund (NGF), 74–5
negative correlation, **136**
negative returns, 96
negotiable instruments, 467
negotiated commissions, **74**
net profit margin, 228–9
estimates of future behaviour, 255
net tangible assets (NTA), **396**
net working capital, 225–6
new highs-new lows, 300–1
new issues, 30
New York Stock Exchange (NYSE), 28
newspapers, as sources of information, 58
NGF *see* National Guarantee Fund
noise traders, 190
non-callable bonds, 329
non-diversifiable risk, **144**
related to return, 152, 155
non-dividend-paying shares
expected return, 269–70
valuation, 269
NTA *see* net tangible assets
NYSE *see* New York Stock Exchange

OBV *see* on-balance volume
odd-lot trading, 299–300
off-market repurchases, 180
Olympic Games (Sydney, 2000), 285–6
on-balance volume (OBV), 301–2
on-market offers, 180
online brokers, **67**, 68
online calculators, *52*, 53
online investing, 50
effective use of Internet, 53–5
getting started, 50–5
investment clubs, 77
order tickets, *72*
procedures, 71–3
online scams, 60–2
online trading, 71–3
day traders, 73
tips for success, 73
open interest, **504**
open outcry auctions, **500**
opportunity cost, 125
option premiums, **468**
option-pricing models, 477–9
on the web, 479
option sellers, **468**
option spreading, 485–6
defined, **485**
option straddles, **486**
option writers, **468**
options, **10**, 466–92
backdating, 476
compared with futures contracts, 499
defined, **467**
exchange-traded funds, 489
foreign exchange, 489
on futures, 515–16
intrinsic value, 474–6
markets, 470
measurement of returns, 434–5
pricing, 473–9
determinants, 476–9
models, 477–9
pros and cons, 469
time value, 475–6
defined, **476**
trading, speculation, 479–81
trading in Australia, 466
trading strategies, 479–86
options exchanges, 29
options hedges, 481–3
options markets, 470
ordinary annuities, **124**
ordinary shares, **8–9**
characteristics, 178
defined, **8**
ownership, *4*
types, 189–94
organised securities exchanges, **27**, 28–31
OTC markets *see* over-the-counter (OTC) markets
out-of-the-money call options, **475**
compared with in-the-money call options, 480
over-the-counter (OTC) markets, **27**, 30
overconfidence, 290
overreaction, 291–3
overvalued markets, 258

P/BV ratio, 272–3
P/CF procedure, 272
P/E ratio, 231
approach to share valuation, 270–1
defined, **270**
estimates of future behaviour, 256
forecasting, 251
international comparison, *252*
related to inflation, 251

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

P/S ratio, 272–3
paper profits *see* unrealised capital gains
paper returns, **96**
par value, **182**
participating organisations, 66
participation certificates, 336
pass-through securities, 336
passive investment management, 19
  bonds, 377–8
past performance *see* historical returns
payback period, **344**
payment date, **186**
payment-in-kind bonds, **336**
payout ratio, 232–3
PEG ratio, 231–2
  defined, **231**
per share ratios, 231–3
perfectly negatively correlated series, **137**
perfectly positively correlated series, **137**
personal investment strategies, 57
PIK-bonds, **336**
point-and-figure charts, 304–5
  defined, **304**
pooled diversification, 391–3
  defined, **392**
portfolio betas *see* portfolios, betas
portfolio revision, 443–4
  defined, **444**
portfolio theory, 133
portfolios, 133–58
  betas, 152–5
    calculation, 153–4
    defined, **153**
    interpretation, 154–5
  construction, 12, 427–30
  defined, **12**
  holding period return, 440–1
  management, 12, 426–52
  objectives, 134, 427–8
  performance measurement, 437–44
    capital gains, 439–40
    compared with market measures, 441–3
    income, 438–9
    sum invested, 438
  planning, 134–43
  policies, 427–8
  returns
    calculation, 134–6
    measurement, 438–41
    standard deviation, 134–6, 138
  revision, 443–4
    defined, **444**
  and self-managed superannuation funds, 436–7
  tracking tools, 53
positive correlation, **136**
post-earnings announcement drift, 287–8
postage stamps *see* stamps
preference shares, **9**
  convertibility, 339
  pricing, 261
premium bonds, **327**
present value, 93–4, 125–8
  annuities, 128
  and calculation of dividend growth rate, 262–3
  defined, **125**
  mixed streams, 127
  streams of returns, 126–7
price-to-book value (P/BV) ratio, 272–3
price-to-cash-flow (P/CF) procedure, 272
price information, 57
price-relative procedures
  share valuation, 271–3
  see also P/E ratio, approach to share valuation
price-to-sales (P/S) ratio, 272–3
price /earnings (P/E) ratio, 231
  approach to share valuation, 270–1
    defined, **270**
  estimates of future behaviour, 256
  forecasting, 251
  international comparison, 252
  related to inflation, 251
  see also relative P/E multiples
prices *see* consumer prices; producer prices
price volatility, **105**
primary markets, **26**
prime rate, **39**
principal, **327**
  bonds, 326–7
private placements, **26**, **179**
problem investments, 435–6
producer prices, 214
profitability, measurement, 228–30
profitability measures, **228**
promised yield, 364–6
  defined, **364**
property
  defined, **4**
  type of investment, 3
  see also real estate
protective puts, 481–3
  limiting capital loss, 481–2
  protecting profits, 482–3
public offerings, **26**, **179**
publicly traded issues, **179**
purchasing power risk, 103–4
  bonds, 325
  defined, **104**
put options, 467–73
  buyers, 468
  contracts, 467–8
  defined, **467**
  features, 467–9
  in practice, 468–9
  profit potential, 473–4
  sellers, 468
  speculation, 481
  transactions, 471–2
puts, **467**
  see also put options
pyramiding, **40**
  principles, 40–1

quality long-term growth strategy, 198–9
quotations, 53, **60**, 181

random walk hypothesis, **284**
rate of growth, **101**
  computation, 101–2
ratio analysis, **224**
real estate, **11**
  see also property
real estate investment trusts (REITs), 140
real rate of return, **95**
realised capital gains
  defined, **415**
  managed funds, 415–16
realised returns, **96**
realised yield, 365–6, 368–9, **368**
refunding provisions, **329**
regular income provision
  managed funds, 407
regular withdrawal plans, **407**
regulation
  investment advisers, 76
  managed funds, 395
  securities markets, 35–6
reinvestment rate, **100**
reinvestment risk, bonds, 370
REITs *see* real estate investment trusts
relative P/E multiples, 252–3
  defined, **252**
relative strength index (RSI), 302
relevant risk, **153**
representativeness, 291–4
required rate of return, **257**
  share valuation process, 257–9
required return, 95–6
  bonds, 354
  defined, **95**
residual owners, **175**
retail sales, 214
retention rate, 266
return on assets (ROA), 229
  break down, 229–30
return on equity (ROE), 229
  break down, 230
  calculation of
    earnings per share, 253
    expected dividend growth rate, 266
  expanded equation, 230
return on invested capital, **505**
  futures contracts, 505–6
return on investment (ROI) *see* return on equity
returns, 89–102
  components, 89–90, 96
  defined, **3**, **89**
  historical performance, 90
  level, 91–2
    Australia, 91
    external forces, 91–2
    internal characteristics, 91
  measurement, 94–102
  record maintenance, 431
  related to risk, 103
  shares, 175–6
  significance, 90–1
  superannuation funds, 88
  and time value of money, 93–4
rights offerings, **26**, **179**
risk, 103–10
  acceptable level, 109
  assessment, 108–9
  bonds, 325–6, 354, 370
  components, 144

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

risk *(continued)*
defined, **5**, **103**
diversification, 153
negatively correlated assets, *138*
and historical returns, 107
managed funds, 419
margin trading, 37, 41
related to return *see* risk-return tradeoff
short-term investments, 16
sources, 103–5
superannuation funds, 88
see also currency exchange risk
risk-averse investors, **109**
risk-free rate, **95**, **155**
risk-indifferent investors, **109**
risk preferences, 109
risk premium, **95**, 103
risk-return tradeoff, **103**, 107–8, 152, 435
assets with various correlation coefficients, *141*
defined, **155**
investment vehicles compared, *108*
portfolio management, 155, *156*
risk-seeking investors, **109**
risk of a single asset, 105–7
ROA *see* return on assets
ROE *see* return on equity
ROI (return on investment) *see* return on equity
round-trip commissions, 501–2
defined, **501**
RSI *see* relative strength index

satisfactory investments, **93**
determination, 93–4
Scholes, Myron *see* Black-Scholes option-pricing model
screening tools, 53
secondary distributions, **30**
secondary markets, **27**
sector funds, 403–4
defined, **403**
secured bonds, 329–30
secured debt, 329–30
securities
analysis, 210–12
defined, **210**
efficient market hypothesis, 211
principles, 210–11
top-down approach, 210–11
defined, **3**
interest rate risk, 104
selection, **428**
selling process, 26–7
transactions *see* transactions
types of investments, 3
see also fixed-income securities
Securities Exchanges Guarantee Corporation, **74**
investor protection, 74–5
securities markets, 5, **26**
conditions, 31
globalisation, 32–5
regulation, 35–6
trading hours, 35
types, 26–7
securitisation, **336**
security analysis *see* securities, analysis
security market line (SML), **148**, *149*
security selection, **428**
self-attribution bias, 290–1
self-managed superannuation funds (SMSFs), 436–7
semi-annual compounding, 362–3
yield-to-maturity, 365
semi-strong form EMH, 285–6, **285**
serial bonds, **327**
settlement price, **504**
SFE *see* Sydney Futures Exchange
share analysts
ethical issues, 260
reliability, 266
share bubbles, 190
share buy-backs, 180
share index options, 487–9
defined, **487**
investment uses, 487–9
hedging vehicles, 487–8
quotations, *488*
share market
averages *see* averages
indices *see* indices
as a leading indicator, 215–16
share options, 470–3
provisions, 470–1
share price quotations *see* quotations
share repurchases, 180
shareholders' reports, **58**, *59*
shares, 174–201
analysis, 209–38
appeal, 175
Australian performance, 174
book value, 182–3
defined, **182**
buy-backs, 180
buying and selling, 181–2
transaction costs, 181–2
compared with bonds, 322–5, 369
as corporate security, 179–81
instalment value, **183**
market value, **183**
ownership, 176–8
advantages, 177
disadvantages, 177
par value, **182**
performance, 433
price
behaviour, 175
future behaviour, 255–7
impact of economic factors, 215
impact of Olympic Games, 285–6
information, sources, 60
quotes, 181
repurchase, 180
residual owners, **175**
returns, 175–6
compared with return on bonds, 177, *178*
trading, 181–2
transaction costs, 181–2
valuation, 248–73
defined, **249**
function of future returns, 249
future price, 255–7
models, 259–73
non-dividend-paying shares, 269
price-relative procedures, 271–3
process, 257–9
standards of performance, 249–59
values, 182–3
see also ordinary shares; preference shares
Sharpe's measure, 441–2
defined, **441**
short hedges, 514–15
short interest, 298–9
defined, **298**
short positions
futures trading, 501
interest rate futures, 513–14
short selling, **41**
essentials, 41–2
and global financial crisis, 300
mechanics, *42*
pros and cons, 41–2
uses, 42
short straddles, 486
short-term investments, **5**, 7–8
and liquidity needs, 15–17
pros and cons, 16–17
role, 16–17
suitability, 17
short-term trading, 199
compared with buy-and-hold strategy, 286
in managed funds, 409
simple interest, **120**
single assets, risk, 105–7
small-cap funds *see* aggressive growth funds
small-cap shares, 193–4
defined, **193**
small-firm effect, 287
SML *see* security market line
SMSFs *see* self-managed superannuation funds
socially responsible funds, **404**
speciality issues of bonds, 335
speculation, **5**, 199
commodities trading, 506–7
financial futures, 513
futures markets, 500
options trading, 479–81
call options, 480
put options, 481
use of managed funds, 409
speculative shares, 191–2
defined, **191**
split ratings, **331**
spreading
commodities futures, 506–7
options, 485–6
spreadsheets *see* electronic spreadsheets
stamps, as investment, 3
Standard & Poor's indices, 64
definition, **64**
standard deviation
defined, **106**
measurement of
portfolio returns, 134–6
risk, 106–7

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

portfolio returns, 136, 137–41
single assets, 106–7
state bonds, **334**
statements of cash flows, *223*
defined, **221**
use in fundamental analysis, 221–4
Stewart, Martha, 68
stock dividends, **186**, 187
stock spin-offs, **179**
stock splits, 179–80
defined, **179**
stockbrokers, **66**
opening an account, 69–70
role, 66–70
selection, 69
stop-limit orders, 71
stop-loss orders, 449–50
definition, **71**
procedures, **71**
stop orders, 71
Storm Investing, 15
streams of returns
present value, 126–7
strike price, **471**
strong form EMH, **286**
subordinated debentures, **330**
convertible bonds, 340
junk bonds, 336
subscription services, 60
superannuation *see* self-managed superannuation funds
superannuation funds, return and risk, 88
suppliers, 5, 6
Sydney Futures Exchange (SFE), 500
systematic risk *see* non-diversifiable risk

T-bonds, **334**
T-notes, 321
TAAM New Asia Fund, 142
Tabcorp, 353
tactical asset allocation, **429**
tangibles, **11**
target prices, **254**
investor facts, 254
tax bite, 14
tax planning, **13**
tax risk, **105**
tax swaps, 379
taxation, 13
impact on returns, 14
managed funds, 398
planning, 13
and sale of investments, 450–1
tech shares, **191**
technical analysis, 295–307
application, 295–6
defined, **295**
Templeton, John Marks, 445
term bonds, **327**
term structure of interest rates, 357–60
defined, **357**
explanations, 358–9
theory of contrary opinion, **299**
thin markets, 105
TIBS *see* Treasury inflation-indexed bonds
time value
of money, **120**
computational aids, 93, 122–3
related to returns, 93–4
of options, 475–6
defined, **476**
times interest earned, 228
total asset turnover, 227
total return, **90**
approach to investing, 198–9
measurement using HPR, 97
total risk, **144**
Trades Practices Act 1974 see *Consumer and Competition Act 2010*
trading action, 297
trading index (TRIN), 301
trading rules, 300–3
traditional portfolio management, 150–1
compared with modern approach, 150–6
defined, **150**
reconciliation with modern approach, 155–6
trailing earnings, 271
transactions
call options, 471–2
costs, 74
online, 71–3
orders, 70–1
procedures, 66–76
put options, 471–2
timing, 444–51
formula plans, 445–9
limit orders, 449
sales, 450–1
stop-loss orders, 449–50
types, 36–42
transfer privileges, 340–1, 407–8
defined, **340**, **407**
Treasury bonds, **334**
pricing futures contracts, 512–13
Treasury inflation-indexed bonds (TIBS), **334**
Treasury notes, 321
Treynor's measure, **442**
TRIN (trading index), 301
true rate of interest, **120**
trust deeds, 395
trustee accounts, **69**

uncorrelated series, 136–7
defined, **137**
underreaction, 293
undervalued markets, 258
underwriting, **26**
syndicates, **26**
undiversifiable risk *see* non-diversifiable risk
unemployment, 214, 216
unlisted funds, 395–6
compared with listed funds, 413–14
defined, **395**
unrealised capital gains
defined, **416**
managed funds, 416
unsecured bonds, 329–30
unsecured debt, 329–30
unsystematic risk *see* diversifiable risk

valuation, **257**
bonds, 353–80
convertible bonds, 342–5
options, 477–9
shares *see* shares, valuation
value effect, 288, 292–3
value funds, **400**
value investors, 259
value shares, 190–1, 292
defined, **190**
variable-growth model, 261, 264–6
application, 265–6
compared with D&E approach, 268
variable-ratio plans, 448–9
defined, **449**
vertical spreads, 486

warehousing liquidity, 450
weak form (EMH), **285**
whipsawing, **450**
women as investors, 290
writing options, 483–5

Yahoo!7 Finance, 431, 432
yield, 98–101
defined, **98**
single cash flow, 98–9
stream of income, 99–100
see also dividend yield
yield-to-call, 366–7
defined, **367**
yield curves, 357–60
defined, **357**
plotting, 358
types, *357*, 358
use in investment decisions, 359–60
yield-to-maturity (YTM), 364–6
annual compounding, 365
compared with expected return, 368
defined, **364**
problems, 370
and return on shares, 433
semi-annual compounding, 365
yield properties, 365–6
yield pickup swaps, 379
yield properties, 365–6
yield spreads, **322**, **354**
yield on a zero, 366
YTM *see* yield-to-maturity

zero-coupon bonds, **335**
zero-growth model, 260, 261

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e

Copyright © Pearson Australia (a division of Pearson Australia Group Pty Ltd) 2011 - 9781442532885 - Gitman/Fundamentals of Investing 4e